

First Aero Weekly in the World.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

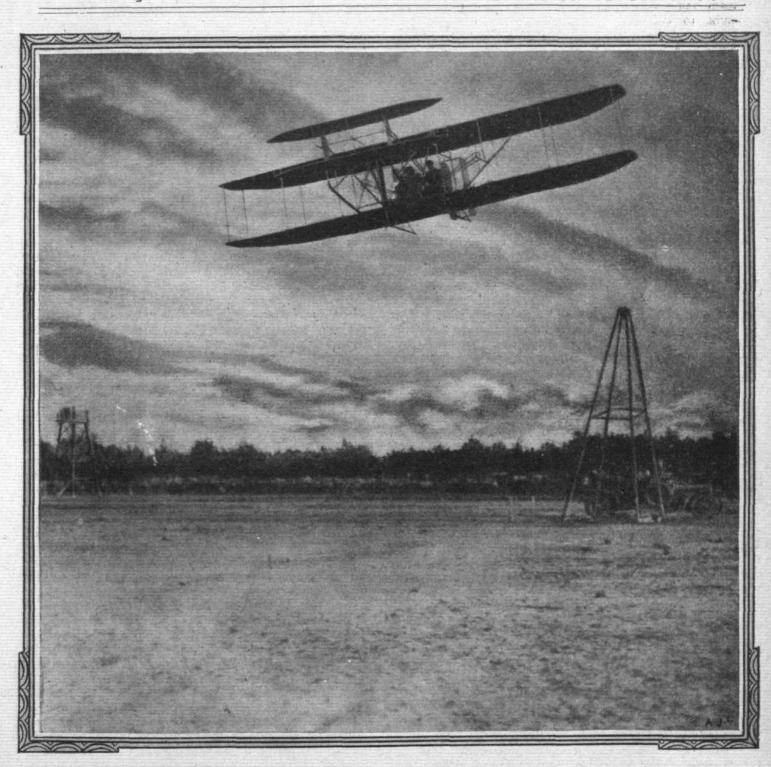
### OFFICIAL ORGAN OF THE AERO CLUB OF THE UNITED KINGDOM.

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WRIGHT FLYER DEVELOPMENTS.—It is but a very short time ago—little more than a year—that Wilbur Wright first publicly demonstrated his remarkable flyer in France, that the above photograph is of historic interest in connection with the information recorded elsewhere regarding the commercial development of the Wright flyer in America. The above shows him during his flight of 1h. 9m. 45½s, with M. Painleve, on October 11th, 1908, at Auvours, the culminating test in the contract with the French syndicate.



# PROVINCIAL CLUBS AND NATIONAL REPRESENTATION.

To the casual observer who may take a very real interest in aeronautic matters, but who may not have any direct means of ascertaining the immediate inwardness of things, the meeting that was called by the Midland Aero Club in London on Wednesday evening of last week, must have seemed to have been something in the nature of a fiasco. This meeting was of course summoned in continuance of a similar meeting held at Blackpool during the aviation week that was held up there, and the main object was to enable the newly-formed provincial clubs to come to some definite conclusion on the subject of association with the Aero Club of the United Kingdom, whereby they might settle once and for all upon a scheme giving each club a voice in the aeronautic policy to be pursued in this country, and also in the representation of the United Kingdom on the International Federation, of which the A.C.U.K. has for some time now been the accredited representative of Great Britain. Virtually it may be said that the meeting of Wednesday last in London was wholly and solely rendered necessary, owing to the regrettable seeds of discord that have been assiduously sown by certain self-seeking individuals who have suddenly sprung up since the comparatively recent practical success of the motor-driven aeroplane and have seen fit to disparage those existing British aeronautic institutions which were much earlier in the field than themselves, but which were (naturally enough) not taken nearly so much by surprise as themselves when the Brothers Wright and when Mr. Henry Farman amongst others on the Continent, actually proved the practicability of power-driven heavier-than-air flying machines. The details of all this will be far better known to the world at large ten or even five years hence than they are to-day, but we very much fancy that many of those who turned up at the meeting in London last week to oppose acceptance by the provincial clubs of the scheme put forward by the Aero Club for mutual co-operation through a special committee, have as the direct result of that meeting discovered the mistake that they were about to be misled into making. At the meeting itself the question at issue was as to whether the provincial clubs which are at present in their infancy, although they have vast potentialities before them in the years to come-were going to accept an extremely democratic and liberal offer made to them by the parent national club, or whether they were going to allow themselves to be persuaded by a small body of impracticable malcontents to regard the Aero Club with distrust as to its intentions and capabilities, chiefly on the erroneous assumption that it would be pretty sure to take advantage of its long-established position at the head of the sporting side of the movement in this country to act in an arbitrary and high-handed manner as regards the provincial bodies. Several of those who had quite innocently and quite unnecessarily placed themselves on their guard in this respect were inclined to advocate totally independent action on the part of the provincial clubs, whereby a kind of national committee would be formed, with its own Chairman and own Secretary to look after national matters, leaving it entirely to the Aero Club to safeguard the interests of Great Britain on all international questions. Unfortunately at the meeting itself an unpleasant feeling was imported by the unmistakably adverse attitude that was adopted by the Chairman towards the Aero Club. Various

mistakes were in consequence made, which virtually caused the meeting itself to become little more than a farce. The hand of the Aeroplane Club could, for instance, be fairly clearly discerned as the sower of dissension, and yet when the matter of voting came along, prominent representatives of that Club were allowed to record their votes, while members of the Aero Club itself were informed that they were debarred. The ins and outs of the meeting are, however, of little if any importance to anyone just now, for not only is it more than probable that the visits of the provincial delegates to London must have opened their eyes to a few facts of which they were quite unaware before, but, fortunately for the future peace of the aeronautic movement, that enfant terrible of the coming industry, the Aeroplane Club, is now ceasing to have any individual existence, and has at last been mercifully absorbed by a body which has at any rate had practical experience in the conduct of really useful work for the good of the motor cause—to wit, the Motor Union of Great Britain and Ireland.

We cannot do better, perhaps, than draw the attention of our readers to a couple of letters in our correspondence columns this week. Therein the whole root of the matter is well expressed when it is asked what the provincial clubs can really expect that they have not already been offered voluntarily and in a most liberal way by the Aero Club. All the mischief-making of the kind that has sought to undermine the prestige of the older existing bodies in the country, has only stood a chance of doing harm in so far as it is reckoned on being able to establish jealousies between leading spirits in the provinces and those who have sought direct representation in London, before any pourparlers whatever had taken place, or were even possible in view of the unfledged state of the country organisations. It is but to be expected that all those who are really devoting themselves heart and soul to the movement, and are also able to bring their services to bear by attendance at constant committee meetings at headquarters, will always continue to join the parent club, which for the obvious convenience of the majority-but for no other reason-must have its headquarters in London. The majority of such members are, by the very nature of things, also likely to join one or more provincial clubs that may be formed in the districts in which they live; but surely, as both "Flug" and Mr. Walmesley suggest in their letters, it is unreasonable for the provincial clubs to ask for more than fair representation in the conduct of the affairs that affect the interests of the flight movement throughout the entire kingdom, and it would be a fatal mistake on their part to cut themselves off from the exercise of their due proportion of control in all these matters of world-wide influence that receive the attention of the International Federation. These are matters which we have good reason to hope were brought home to more than one delegate from the provinces at the meeting of last week-at a meeting, in fact, which was apparently antagonistic to the dignity and welfare of progress in the immediate future, but which, by the very absurdity of the antagonism directed towards existing authority, must have very nearly put an end to what has been an unfortunate episode in the early politics of the aeronautic movement.



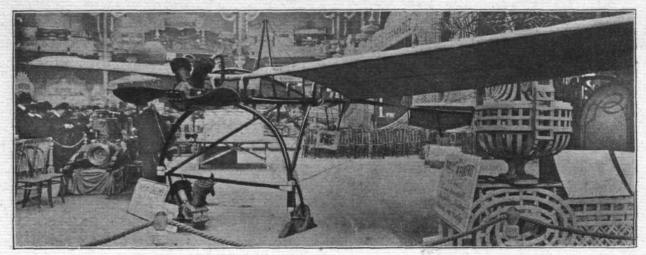
## FLYER SILHOUETTES FROM THE PARIS SALON.

(Concluded from page 740.)

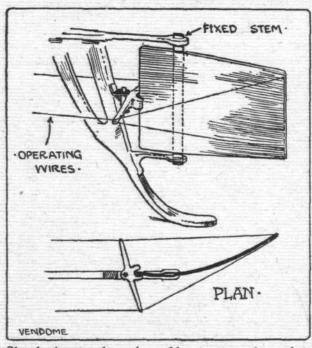
#### VENDOME No. 3 BIS.

Monoplane, having double-surfaced wings set at a slight dihedral angle. The body has a very skeleton-like appearance, as it is formed solely by two longitudinal spars, situated about 18 ins. apart

panying sketch shows how the rudder is mounted to give the flexing action. It will be noticed that the fixed rudder-post passes through the rudder about 5 ins. from the leading edge. The leading edge is

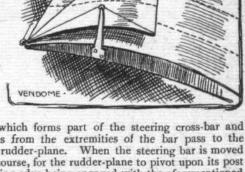


Vendome Monoplane at Paris Flight Show.



Sketch showing how the rudder is warped on the Vendome flyer.

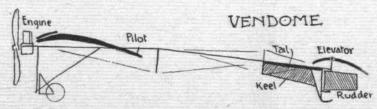




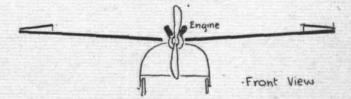
gripped by a fork, which forms part of the steering cross-bar and turns with it; wires from the extremities of the bar pass to the trailing edge of the rudder-plane. When the steering bar is moved the tendency is, of course, for the rudder-plane to pivot upon its post bodily, but its leading edge being engaged with the aforementioned fork, this is impossible, and in consequence the surface has to flex into cambered form.

LEADING

Small triangular planes are fitted above the extremities of the wings on the Vendome flyer and are coupled up to the mechanism which operates the rudder. This consists of a pivoted bar lying



between the wings, and closing together aft, where they extend rearwards to carry the tail. The tail proper consists of a fixed horizontal plane and a fixed vertical plane beneath it. There is in addition a rudder and an elevator. The rudder is mounted so that it warps into a cambered section when steering; the elevator being considerably cambered in its normal state, is merely pivoted in order to enable its angle of incidence to be varied. An accom-



horizontally in front of the pilot's seat in such a position that it forms a foot-rest. Pressing forward with the right foot moves the bar so that the rudder is put over for steering to the right and simultaneously the flap above the extremity of the right-hand wingtip is raised. The action of this would presumably be to increase the resistance on that side of the machine and thereby increase the steering effect; they are not, apparently, used as balancing planes.

## Hight)

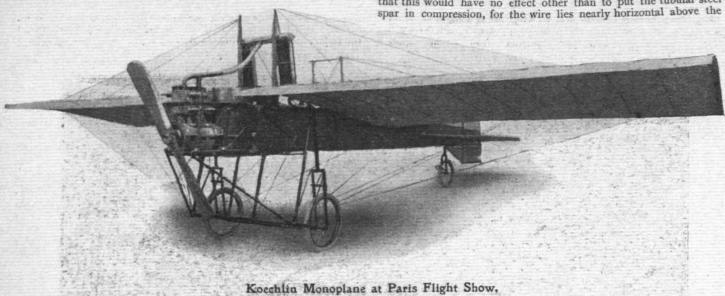
#### KOECHLIN.

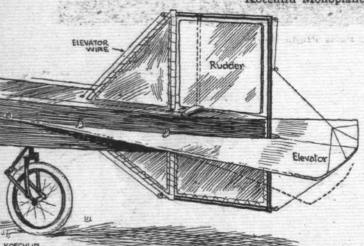
Monoplane, in which the two principal points of interest are the

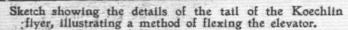
watertight wood body and the method of warping the wings.

The body is constructed like a light racing skiff, but is flat-bottomed throughout. It is also decked in except for a small cock-

The back of the pilot's seat is pivoted so that upper ends. it sways with his body, and consequently if he leans over to the left he is able to pull upon the upper wire passing to the top side of the lever on the right hand wing. At first sight it might be supposed that this would have no effect other than to put the tubular steel spar in compression for the right hand wing the state of the right hand with the state of the right hand with the right hand with the state of the right hand with the right

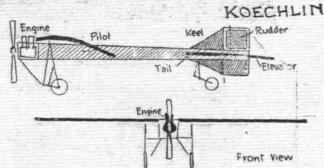




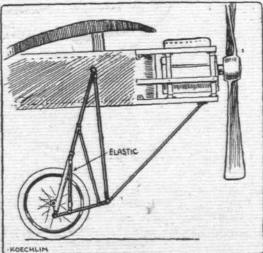


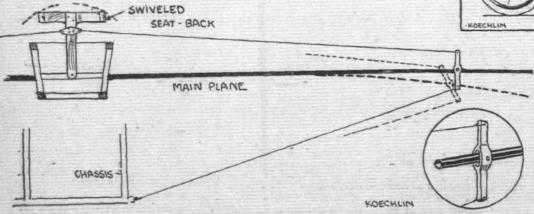
pit accommodating the pilot's seat. In order that the lines of the body shall be disturbed as little as possible, the engine has been mounted outside on a bracket which projects in front of the "bows."

The wings are supported on tubular steel spars, as shown in an accompanying sketch, and near the extremities of the smaller tubes, which are adjacent to the trailing edge of the wings, two short wooden cross-pieces are hinged. These little levers are anchored to wooden cross-pieces are hinged. These little levers are anchored to the chassis frame by wires passing from their lower extremities, and also to the back of the pilot's seat by wires attached to their



Sketch showing the attachment of the engine to the water-tight hull of the Koechlin flyer.





Sketch showing how the wings are warped on the Koechlin flyer.

The spar itself, however, wing. The spar itself, however, is initially slightly curved, and under additional stress bends still further into an arch concave to the earth. The wooden lever is the earth. merely a device for applying a force to the axis of the rod, and the lever is hinged so that the fulcrum afforded by its anchorage shall be maintained when the spar bends. The system is illustrated by an accompanying diagram, and another sketch relating to this machine shows the method of flexing the tail for use as an elevator. rudder is provided at the rear.



### SOARING FLIGHT.

By WILBUR WRIGHT.

BEFORE bringing his second paper, which he read before the American Western Society of Engineers in 1903, to a conclusion, Wilbur Wright devoted a section to the subject of soaring flight (see FLIGHT, Nov. 13th, 1909), to which, as his opening remarks show, he and his brother Orville paid great attention during such times as they were not actually making their own gliding experiments.

were not actually making their own gliding experiments.

"In addition to the work with the machine, we also made many observations on the flight of soaring birds, which were very abundant in the vicinity of our camp. Bald eagles, ospreys, hawks and buzzards gave us daily exhibitions of their powers. The buzzards were the most numerous and were the most persistent soarers. They apparently never flapped except when it was absolutely necessary, while the eagles and hawks usually soared only when they were at leisure. Two methods of soaring were employed. When the weather was cold and damp and the wind strong, the buzzards would be seen soaring back and forth along the hills or at the edge of a clump of trees. They were evidently taking advantage of the current of air flowing upward over these obstructions. On such days they were often utterly unable to soar except in these special places. But on warm clear days when the wind was light they would be seen high in the air, soaring in great circles. Usually, however, it seemed to be necessary to reach a height of several hundred feet by flapping before this style of soaring became possible. Frequently a great number of them would begin circling in one spot, rising together higher and higher, till finally they would disperse, each gliding off in whatever direction it wished to go. At such times other buzzards only a short distance away found it necessary to flap frequently in order to maintain themselves. But when they reached a point beneath the circling flock, they too began to rise on motionless wings. This seemed to indicate that rising columns of air do not exist everywhere, but that the birds must find them. They evidently watch each other, and when one finds a rising current the others quickly make their way to it. One day when scarce a breath of wind was stirring on the ground, we noticed two bald eagles sailing in circling sweeps at a height of probably 500 feet. After a time our attention was attracted to the flashing of some object considerably lower down. Examination with a field glass proved it to be a feather which one of the birds had evidently cast. As it seemed apparent that it would come to earth only a short distance away, some of our party started to get it. But in a little while it was noticed that the feather was no longer falling, but, on the contrary, was rising rapidly. It finally went out of sight upward. It apparently was drawn into the same rising current in which the eagles were soaring, and was carried up like the birds.

"The days when the wind blew horizontally gave us the most satisfactory observations, as then the birds were compelled to make use of the currents flowing up the sides of the hills, and it was possible for us to measure the velocity and trend of the wind in which the soaring was performed. One day four buzzards began soaring on the north-east slope of the Big Hill at a height of only 10 or 12 ft. from the surface. We took a position to windward and about 1,200 ft. distant. The clinometer showed that they were  $4\frac{1}{2}$ 0 to  $5\frac{1}{2}$ ° above our horizon. We could see them very distinctly with a field glass. When facing us the under side of their wings made a broad

band on the sky, but when in circling they faced from us we could no longer see the under side of their wings. Though the wings then made little more than a line on the sky the glass showed clearly that it was not the under side that we saw. It was evident that the buzzards were soaring with their wings constantly inclined about 5° above the horizon. They were attempting to gain sufficient altitude to enable them to glide to the ocean beach three-fourths of a mile distant, but after reaching a height of about 75 ft. above the top of the hill they seemed to be unable to rise higher, though they tried a long time. At last they started to glide toward the ocean, but were compelled to begin flapping almost immediately. We at once measured the slope and the wind. The former was 121°; the latter was 6 to 8 metres per second. Since the wings were inclined 5° above the horizon and the wind had a rising trend of fully 12°, the angle of incidence was about 17°. The wind did not average more than 7 metres, 15 miles an hour. For the most part the birds faced the wind steadily, but in the lulls they were compelled to circle or glide back and forth in order: to obtain speed sufficient to provide support. As the buzzard weighs about 8 lb. per square foot of wing area, the lifting power of the wind at 17° angle of incidence was apparently as great as it would have been had it been blowing straight upward with equal velocity. The pressure was inclined 5° in front of the normal, and the angle of descent was 121°.

"On another day I stood on the top of the West Hill directly behind a buzzard which was soaring on the steep southern slope. It was just on a level with my eye and not more than 75 ft. distant. For some time it remained almost motionless. Although the wings were inclined about 5° above the horizon, it was not driven backward by the wind. This bird is specially adapted to soaring at large angles of incidence in strongly rising currents. Its wings are deeply curved. Unless the upward trend amounts to at least 8° it seems to be unable to maintain itself. One day we watched a flock attempting to soar on the west slope of the Big Hill, which has a descent of nearly 9°. The birds would start near the top and glide down along the slope very much as we did with the machine, but we noticed that whenever they glided parallel with the slope their speed diminished, and when their speed was maintained the angle of descent was greater than that of the hill. In every case they found it necessary to flap before they had gone 200 ft. They tried time and again but always with the same results. Finally they resorted to hard flapping till a height of about 150 ft. above the top of the hill was reached, after which they were able to soar in circles without difficulty. On another day they finally succeeded in rising on almost the same slope, from which it was concluded that the buzzard's best angle of descent could not be far from 8°. There is no question in my mind that men can build wings having as little or less relative resistance than that of the best soaring birds. The bird's wings are undoubtedly very well designed indeed, but it is not any extraordinary efficiency that strikes with astonishment but rather the marvellous skill with which they are used. It is true that I have seen birds perform soaring feats of almost incredible nature in positions where it was not possible to measure the speed and trend of the wind, but

whenever it was possible to determine by actual measure-

ment the conditions under which the soaring was per-



formed, it was easy to account for it on the basis of the results obtained with artificial wings. The soaring problem is apparently not so much one of better wings as of better operators."

Replying to the subsequent discussion which took place, Mr. Wright was led to make the following

"I do not think any bird soars in a horizontal wind. In order to soar it is necessary that the resultant of all the pressures produced by the relative wind be exactly vertical, but in a horizontal wind this pressure is always inclined at least 6° backwards from the vertical. It therefore has a horizontal component which would cause the bird to drift with the wind until the relative speed required for support was entirely lost. It is only in a rising trend of wind that the bird can obtain propelling forces to balance the drift, and thus make the resultant of all the pressures vertical.

"Most birds incline the body to change the plane of the wings. Some years ago Professor Marey made photographs of the flight of birds, employing a camera making fifty exposures a second. From these pictures it would appear that a bird's body rocks. The wings are moved diagonally forward on the down stroke, and backward on the up stroke. At the end of the down stroke the wings are in front of the centre of gravity, so that the bird's body turns up in front, and remains so while the wings are being raised with the backward movement. But the wings being thus brought behind the centre of gravity, the axis of the body tilts downward again. By this backward and forward motion of the wings the bird rocks its whole body, and thus inclines the plane of its wings upward and downward with every stroke. We use the same principle that the bird uses in turning upwards; that is, we get more pressure in front of the centre of gravity." 8

8

#### NINETY YEARS HENCE.\* RUDYARD KIPLING ON FLIGHT

A HEARTY welcome should be extended to Mr. Rudyard Kipling's latest contribution to the literature of the day, if only because that work contains a real story based upon the rapidly approaching flying era. Many readers of FLIGHT will also absorb this exciting imaginary trip by air from London to Quebec with very real pleasure, for it possesses all the "go" and semblance of reality which only a master-pen can command, and to which only a Kipling can do absolute justice, when the theme essentially depends—as it again does in this case—upon the workings of some awe-inspiring mechanism like an express train, an ocean greyhound, or a transatlantic aerial night mail. In "With the Night Mail" we start on a gusty winter night from one of the 300-ft. G.P.O. outward despatch-towers at Highgate for the journey on "Postal Packet 162," which conveys the Canadian mails to

\* "Actions and Reactions." By Rudyard Kipling. Macmillan and Co., Ltd., London.

Quebec; and ultimately, after an interesting, businesslike, and somewhat eventful run at a height of some 3,000 to 10,000 feet above the surface of the earth, we drop lightly down into the Heights Receiving Towers, some twenty minutes ahead of schedule time, after an early breakfast, next morning. No useful purpose can be served by entering more fully into the details of the yarn, since those who would enjoy it must read the thirty odd pages for themselves. Having done so, they will then fully appreciate the subtle humour of the further thirty pages devoted to matters aeronautical, which include sundry other extracts (including a few advertisement pages) from the same magazine in which this "story of 2000 A.D." is supposed to have appeared. Higher praise can hardly be given than to say that even the pseudo-technical jargon which obviously has to be invented for a flight of fancy of this kind does not spoil the effect, but is rather amusing than otherwise.

#### A FIRST-CLASS BRITISH MICROMETER.

THERE is perhaps no class of machinery in which more accurate work is required, and is to be found nowadays than that connected with aeroplane construction. Hence, there is naturally a considerable demand for instruments of the utmost precision, whereby the measurement of any parts may be ascertained into at least the 10000th of an inch. Micrometers designed and made specially for this purpose have lately been brought out by the well-known firm of instrument makers, Messrs. Elliott Brothers.

The photograph that we reproduce herewith shows one of these little instruments, which weighs only 2 or 3 ozs., and can be carried quite easily in the waistcoat pocket. In this particular form, it has a ratchet head, that ensures the same results being obtained by different users, inasmuch as the sense of touch with the ordinary instruments is eliminated by the ratchet action which comes into play when a certain definite pressure upon the object that is being measured has been attained. Either with this ratchet head or without it, the Elliott micrometer is

constructed in the 1 in. or in the 2 in. size, and specially easy reading is ensured by the very thorough manner in which all the divisions are numbered around the head.

Particular care has been taken, moreover, to ensure



absolute accuracy measurement in conformity with the British standards at the National Physical Laboratory at Teddington,

while further points which ought to be borne in mind by-those requiring an instrument of this character are that provision is made for taking up wear in the thread, and that a very moderate price is being charged for this all-British production.

breaking strain, is a strong recommendation in its favour. All other model parts are stocked, including a large selection of woods, propellers, coverings, &c., whilst materials, engines, &c., are also supplied for full-size machines. The firm's catalogue and magnalium metal sample price list contain information of considerable interest and should be obtained by all amateurs.

"Everything for the Heavier-than-Air Machine,"
SUCH is the motto of the Central Novelty Co., of 45, Newhall Street, Birmingham, who lay themselves out to supply all parts for models of aeroplanes. They make a great speciality of magnalium in the manufacture of their metal goods, such as rods, wire, tubes, as well as in sheet form. Its lightness, whilst retaining high tensile



### TWO INTERESTING MODELS.

At the present time when so many people are endeavouring to make themselves familiar with various aspects of the problem of aerial flight by the study of model aeroplanes, we feel sure that a great number of our readers will welcome the following description of a couple of excellent models constructed by Mr. Alan H. Burgoyne, small fittings were purchased from New Things, Ltd., are mounted on springs made of bicycle spokes. They were not satisfactory, however, tending to strain the frame, and have been replaced by bent bamboo springs. The whole machine weighs 23 lbs., and this could be considerably reduced. It is entirely collapsible and folds up in two

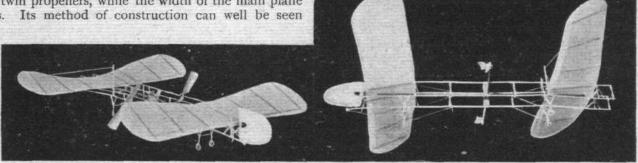


Views of the rear and side of Mr. Burgoyne's Biplane Model,

who has kindly placed the photographs and details of them at our disposal.

Our first two photographs are of a biplane, copied largely from one which proved successful in a recent model flying machine competition. This one, however, is not a success, although this is due not to the type but to faulty balance, a feature which can be remedied with a little patience. It is 5 ft. from side to side of the main planes and 4 ft. 3 ins. from the front to the outside edges of the twin propellers, while the width of the main plane is 9 ins. Its method of construction can well be seen

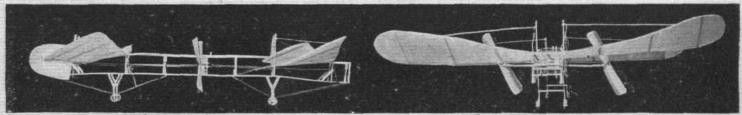
minutes; this, for so large a model, is, it is believed, quite unique. The material used for the planes is Japanese silk, which provides an ample resistance. A perfect "stretch" was obtained by damping the silk subsequent to setting up the machine. The angle of the forward plane can be altered by merely shifting a revolving rod. When fixed, it is kept in place by the simple pull of an elastic band.



The Burgoyne-Langley type of Model Aeroplane seen from above and beneath.

from the photographs. The apparatus is firmly trussed on a frame consisting of the engine-bases and two trestle-frames between the main-planes, these being held immovable by steel wire lines tightened as needed by small brass wire-strainers. This method ensures absolute rigidity and enables any wrongful "flex" of the planes, detrimental to flight, to be corrected. All fitments,

The second model, a Langley double monoplane, of which both photographs and plans are given, is a wonderfully steady flyer, and, on a slope or perfectly smooth surface, will pick up off the ground. It will be noticed that the photographs differ from the plans, the photographs being of the model as first built and tried, while the plans show the model as modified and



Front and side views of the Burgoyne-Langley type Model Aeroplane.

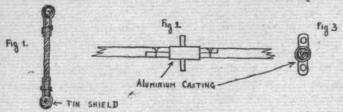
except the wire-strainers, are of aluminium, cast by J. Bonn and Co., who also supplied the geared-elastic motors. These, of which the combined weight of the pair is about  $7\frac{1}{2}$  ozs., drive two ro-in. aluminium propellers; at full tension they have given 550 revolutions over a period of between 40 and 50 seconds. The wheels, which with other

now existing. This type, which is exceedingly graceful, deserves detailed attention.

With regard to the frame, it will be noticed that this is on the cantilever system, 4 ft. long over all and  $3\frac{1}{2}$  ins. square. It is of circular deal rods joined by aluminium eye-hole castings as shown in Figs. 2 and 3. These

Flight)

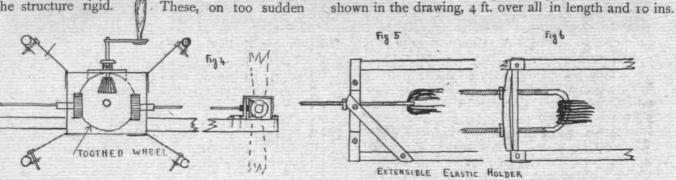
circular rods are held in a square by elm struts 3 ins. long, fitted at either end with a tin head-piece (Fig. 1). They were thus easily slid on to the rods and then pinned



into place. Fig. 7 shows the completed frame with the curved dips fore and aft to take the planes.

The wheels were made by Bonn and Co., from drawings supplied by Mr. Burgoyne, and are held to the lower line of the frame by steel hold the structure rigid.

Wire strainers, which also These, on too sudden



propellers demands.

contact with the ground on descending, give way towards the stern, thus easing the impact and loosening the frame in descent.

The motor is of elastic, and was made by Messrs. Bonn and Co., to specification. It is a beautiful and powerful model, the gearing being remarkably free from friction, and its working can be seen in fair detail in wide. The curve is 1 in 8, and a far better "lift" is obtained with greater surface and at a gain of nearly 1 oz. in weight. These new planes are of mahogany, with whalebone curved ribs. The propellers are of aluminium and have a diameter of 10 ins., though 12-in. screws are now being fitted. Despite its size, the entire weight of this large model is under 15 ozs.—complete as shown

machinery is seen equidistant between the planes, but it

has now been shifted to 6 ins. behind the forward plane

as shown in Fig. 7. This forward move necessitated altering the elastic support, the present position of which is shown in the plans and not in the photographs. These supports are of aluminium and are shown in detail in Figs. 5 and 6. The elastic is fixed on brass U bolts, about 4 ins. long, and, by means of nuts on their outer ends, can be loosened or tightened as the running of the

Originally, the planes were—as shown in the photo-

graphs-Japanese silk stretched on elm and bamboo

frames, and they were given the necessary angle of lift

by strainers from the extremities to the four small elm

masts. Their length was 3 ft. 8 ins. and width 9 ins.

These have now been replaced by curved surfaces as

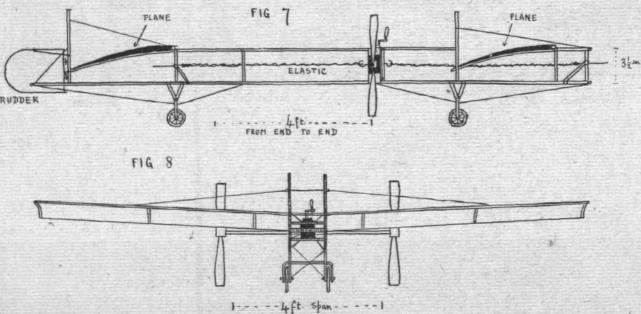


Fig. 4, which also shows the small winding-handle at the top. This only engages with the large cog-wheel (which takes one revolution to four for the propellers) when lifted up. Having twisted the elastic to the maximum, the handle is dropped a quarter of an inch, and so out of engagement with the large cog-wheel. Fig. 4 also illustrates the method of clamping the gear-box to the frame, so that the whole machine could be shifted forward or backward as required, until the correct centre of gravity was discovered. In the photographs, the

in the photographs. With regard to materials, the wood used is mahogany, elm and deal; all the small fittings are of aluminium. Mr. Burgoyne tells us "it is only right to mention that Messrs. Bonn and Co., and New Things, Ltd., whom I first found in the pages of FLIGHT, aided me very greatly in anything I desired."

The models were very expensive—but that is by reason of the alterations and experiments necessary before their final form was reached. Both of them, as stated, can be taken to pieces with ease—a most important feature.



## AERO CLUB OF THE UNITED KINGDOM.

#### OFFICIAL NOTICES TO MEMBERS.

Committee Meeting.

A MEETING of the Committee was held on Tuesday, the 23rd inst., when there were present: Mr. Roger W. Wallace, K.C., in the chair, Mr. Ernest C. Bucknall, Mr. Martin Dale, Professor A. K. Huntington, Mr. V. Ker-Seymer, Mr. J. T. C. Moore-Brabazon, Mr. C. F. Pollock, Hon. C. S. Rolls, Mr. J. Lyons Sampson, Mr. Stanley Spooner, and Joint Secretaries Capt. E. Claremont, R.N., and Harold E. Perrin.

New Members.—The following new Members were elected:—

Harold Arkwright

Harold Arkwright. H. L. I. Butler. Howard Stransom Button. John R. Davies. Mrs. Leslie Fisher. Capt. Ronald Forbes. Hon. Mrs. Leveson Gower. Eugene V. Gratze. Charles Ernest Jobling, Fitzroy Lloyd-Anstruther. Harold Dewe Mathews. Lord Herbert Andrew Montagu-Douglas Scott, D.S.O. Henry Pavillet. Percy Leigh Pemberton. Mrs. Leigh Pemberton. Harold Louis Phillips. William John Potter. Lieut. R. Raikes, R.N. Frederic Strickland. James Thornton. Capt. C. A. Tisdall. H. A. T. Turrill. Reginald A. Wall. Thomas Wise. Harry Collins Woodward.

Doncaster Aviation Meeting.

The following letter was read from the Aero Club de France :-

[Copy of letter from Aero Club de France,]
"To Aero Club of the United Kingdom."
President of the Aero Club of the United Kingdom.

"SIR AND DEAR PRESIDENT, -On demand of M. Delagrange, our colleague, will you kindly allow us to intercede with you with regard to the rigorous measures which have been meted out to him, as well as to M. Le Blon and M. Molon, by the Aero Club of the United Kingdom, on account of his participation in the Doncaster meeting,

"Will you allow us to begin by saying that we quite understand the decision which you have taken with regard to these aviators. "We simply wish to plead extenuating circumstances for them which we certainly think are worthy of your esteemed consideration.

"M. Leon Delagrange had contracted certain engagements in his name and in the names of MM. Le Blon and Molon with the organisers of the Doncaster Meeting the day after the Rheims Week, and at least two months before he knew that this Doncaster Meeting would not be sanctioned by the Aero Club of the United Kingdom.

"Had they, after they had received your notice, not kept the clauses of their contract with the organisers of the Doncaster Meeting, MM. Delagrange, Le Blon and Molon would have exposed them-selves not only to lose the important sums which they had engaged to pay for the transport of their machines and their own expenses, but also to the risk of a lawsuit with the organisers of the Doncaster meeting for breach of contract, and these gentlemen would have certainly made them pay serious damages.

"MM. Delagrange, Le Blon and Molon had engaged themselves to fly at Doncaster in perfect good faith, and we know as a fact that they had no idea that they would expose themselves at the last minute to the serious sporting consequences to which they exposed

themselves.

"Under these conditions we should be extremely happy to see the Aero Club of Great Britain reconsidering the case of our aviators with the greatest leniency possible, remembering that a part of the punishment has already taken effect. Would you let us call your attention to the fact that this is the first case, and one for which, we think, great excuses can be found, as by this mandate these aviators are put in the position of being unable to participate in other meetings, and this alone has already been a very serious punishment. Would it not be possible under these circumstances for the Aero Club of the United Kingdom, though maintaining or in their interest of the Aero Club. taining as is their right the sentence pronounced, to allow

MM. Delagrange, Le Blon, and Molon to benefit by their clemency by causing this act of disqualification to cease on the 1st of December?

"These aviators under this would benefit by one month's grace, which would enable them to defend their chances in the Michelin Cup of 1909, and we are perfectly certain that this act of grace on your part would not in any way detract from the authority of the

Aero Club of the United Kingdom.

"We quite realise that the Aero Club of the United Kingdom is the best and only judge in this matter, and it is only friendship that permits us to draw your attention to this in the hope that you will be benevolent to our aviators.

"Believe me to remain, Sir and dear President, &c., &c., "(Signed) GEORGES BESANCON, "The General Secretary." Having read the correspondence from the Aero Club de France, acknowledging the justice of the penalties imposed, and from the Federation Aeronautique Internationale, registering the disqualifications and notifying the International clubs, out of deference to the courteous appeal of the Aero Club de France, it was resolved to remit one month of the disqualifications of those aviators applying to the Aero Club direct, providing no objection is made thereto by the Federation Aeronautique Internationale.

The following reply was forwarded to the Aero Club de

France :-

"The Aero Club of the United Kingdom, " 166, Piccadilly, Nov. 24th, 1909.

"Dear Sir,—We beg to acknowledge receipt of your courteous letter of the 19th inst., together with the copy of M. Delagrange's letter of the 10th inst. enclosed therein. These letters were read to our Committee last night, and we have been instructed to reply that out of the high regard which the Aero Club of the United Kingdom has always had for the Aero Club de France, our Committee is willing to remit one month of the disqualification pronounced upon MM. Delagrange, Le Blon, and Molon. This disqualification, therefore, will cease on December 1st next.

"The Committee feel, however, that it would be desirable that these three aviators should fully recognize the invites of the contract.

these three aviators should fully recognise the justice of the sentence pronounced upon them, and to that end would be glad to receive from these three gentlemen a letter acknowledging this fact.
M. Delagrange in his letter does not recognise the justice of the
penalty imposed, and whilst quite willing to believe that M. Delagrange was misled by gentlemen whose opinion he was fully justified in accepting, the Aero Club of the United Kingdom would wish the gravity of M. Delagrange's action to be made very clear to him.

"In conclusion, we would add that this remission of sentence must be subject to the consent of the Federation Aeronautique Internationale, whose prestige it is our honour to uphold in this

country.

"Yours faithfully,
"E. CLAREMONT,
Capt., R.N., (Signed) Toint Secretaries. " HAROLD E. PERRIN, )

"The General Secretary, Aero Club de France."

#### Annual Dinner.

The annual dinner will take place at the Whitehall Rooms, Hotel Metropole, Northumberland Avenue, London, W.C., on Wednesday, December 15th, 1909, at 7.30 for 8 o'clock. In order to facilitate the arrangements, members are requested to make early application for tickets, and at the same time send the names of their guests, if any. Tickets, inclusive of wines, £1 7s. 6d. Members may be accompanied by ladies.

The dinner will be followed by a musical programme. others, the following well-known artistes will assist: Miss Nadia Sylva, Miss Mavis Clare, Miss Helen Mar, Mr. Maurice Farkoa

and Mr. Charles Hawtrey.

#### Presentations to the Club.

A member has kindly presented to the Club the original coloured print of the first carriage, the "Aerial."

Major C. de W. Crookshank has also presented an original old coloured etching, "Aerostation out at Elbows," by Vincent Lunardi. As the new rooms for members will shortly be opened, the Club will be very grateful for any such gifts.

## Membership.

The membership of the Aero Club is increasing so rapidly that the 1,000 Founder Members are nearly complete. It is hoped, therefore, that Members will notify their friends who are thinking of joining, as immediately the total of 1,000 is reached, the sub-scription will be increased and an entrance fee charged.

#### New Premises.

The Committee have decided to acquire new premises, and reading, writing and committee rooms will be set apart entirely for the use of Members. It is hoped that the new premises will be ready by Christmas.

> E. CLAREMONT, CAPT. R.N., HAROLD E. PERRIN, Joint Secretaries.

The Aero Club of the United Kingdom, 166, Piccadilly, W.



## PROGRESS OF FLIGHT ABOUT THE COUNTRY.

(Note.—Addresses, temporary or permanent, follow in each case the names of the clubs, where communications of our readers can be addressed direct to the Secretary.)

Midland Aero Club (THE BUNGALOW, STECHFORD, BIRMINGHAM)

The awards in connection with the model competition on Saturday week in Sutton Park have now been published. Mr. G. P. Smith was awarded a bronze medal for the flights of his biplane, while the bronze medal for monoplanes was taken by Mr. T. W. K. Clarke. Mr. G. P. Smith was also awarded the bronze medal for the best model made by an amateur.

Sheffield and District Aero Club (36, COLVER ROAD).

A MEETING of the above club was held on Friday evening, the 19th inst., the chief object of which was to discuss certain matters left over from the previous meeting. The Chairman, Mr. A. V. Kavanagh, opened the meeting, referring to the attitude of the provincial clubs and the Aero Club. The secretary, assisted by Mr. Heeley, explained as simply as possible the present position, and although everyone present recognised the past good work done by the Aero Club, and much sympathy was felt, it was decided to work together with the provincial clubs. Later it was decided to admit ladies free to the membership of the club. The membership continues to grow, and it is hoped that in a week or two a large public meeting will be held.

Earl Fitzwilliam has accepted the presidency of the above club,

Earl Fitzwilliam has accepted the presidency of the above club, and the acquisition of his lordship's patronage should to a great extent enhance the success of the club. C. B. Stuart Wortley, Esq., M.P., has also expressed his willingness to fill a vice-presidency.

S.W. England Aeronautical Soc. (51, St. Leonard's Rd., E Sheen)

This club is now forging well ahead, and a library is in course of formation. Any members who have books to lend or present are asked to communicate with the Secretary. A Committee meeting will be held on the 30th inst, to decide the club's attitude towards the National Council question. The Secretary would remind intending members of the offer of the use of small petrol engines by the works manager. Wood cut to required sizes may be had at the club's aero works at a reduced charge to members.

Yorkshire Aero Club (63, ALBION STREET, LEEDS).

On the 16th inst. Mr. C. E. Dunn, Chairman of the Club, gave the first of a series of lectures, taking as his subject "Patent Law in Relation to Aerial Invention." Mr. H. Knowles presided over the meeting, and in the course of a few remarks pointed out that the Yorkshire A.C. was one of the strongest and most influential of its kind in the country. In consequence their delegates had been received with marked respect by the Aero Club, and their words had been given great consideration. At a Committee meeting held on the 23rd inst., it was felt that the action of the two delegates at the Inter-Club Conference in voting for the Aero Club scheme, subject to modification, was a right one. The Club had now a membership of 250, which represented members who had actually booked their names. Lord Garrock has consented to become a Vice-President of the Club.

## SCOTLAND WELL TO THE FORE

Some very interesting remarks regarding aviation were made by Mr. W. Allen Carter at a meeting of the Royal Scottish Society of Arts held in Edinburgh recently. During the past year, he said, great strides had been made, and what was once regarded as the dream of cranks must now be admitted as a practical means of locomotion now that a machine could remain in the air for several hours and travel great distances. The dreamers who had dreamt of gliding through the air on extended wings had awakened from their dreams to realise that the dream was vanishing and that reality had come instead. From the first century a tradition was handed down that a certain magician, known as Simon of Samaria, proclaimed at the court of the Emperor Nero that one day he would fly like the birds, but his wing-power was insufficient and he broke his legs in his fall. Then there was Roger Bacon in the thirteenth century, who was interested in aerial flight, and 200 years later an English Benedictine, Oliver de Malmesbury, made wings for himself, but when he fractured some limbs he consoled himself by affirming that if he had secured a tail as well he would undoubtedly have succeeded.

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# AN ANTOINETTE MONOPLANE DETAIL.

A CORRESPONDENT has written asking us to explain how the front strut is affixed to the hull-shaped body of the Antoinette machine, and whether any flexibility is provided for. We have therefore prepared the accom-

STAY CUTS SIDE PLATES.
THIN STEEL
COVERNING

panying sketch, which will doubtless be found useful by way of supplementing the details and scale drawings that we published a few weeks ago (October 13th and 20th). From this it will be observed how the strut is stiffened by a diagonal member that is bolted to it with

aluminium side-plates, and how a certain amount of springiness is secured by the use of saw cuts through that portion which comes in contact with the ground and which is protected on the under side by a thin steel armouring.

Scotland had never been behindhand where progress was concerned, and about the year 1508 we had a professor of aviation of our own in the person of Abbot Damian. He was a gentleman with big views, and he proclaimed to King James IV that he would leave Stirling Castle and fly to France. He fixed to himself artificial wings manufactured out of birds' feathers, and launched himself into the air, but he came sadly to grief, breaking his legs. He accounted for his failure by the fact that he had not solely used eagles' feathers. The present tendency was to neglect the balloon and resort to the flying machine, and with greater knowledge of mechanics and physics of the air the future looked very promising. But the problems in aerial flight were very complicated, for the higher up one got the lower was the temperature. Flying machines, however, did not require to go to any great heights, and probably for some time flights would remain within 1,000 ft. of the carth. Even within that range there remained much to be discovered, for the physical conditions of the air would always have an effect on the buoyancy and behaviour of the machines. In time all difficulties would be overcome, and no more astonishment would be caused by the flying machine than by the motor car.

COCHRANE PROPELLERS.

Amongst the recent propellers that have been turned out by Messrs. Cochrane and Co. during the past week or two is one that was brought for us to examine prior to its dispatch to its present owner. Its weight without the coupling boss (which in this particular instance added some 3 lbs.) was but 3½ lbs., while the overall diameter was 3 ft. 6 in.

overall diameter was 3 ft. 6 in.

Neatly constructed on the "Cochrane" principle of aluminium-covered

"Astronomy Lower)" (Vallow Cover) Copyright Photo

"Automotor Journal" (Yellow Cover) Copyright Photo.

The Cochrane type of propeller has corrugated aluminium blades carried by sheet-metal-covered wooden arms.

wood, it appeared to possess all the strength that could be required, in spite of the flexibility of its blades. When driven at 1,000 revolutions per minute by an engine developing 6-h.p., we understand it was found to give a thrust of about 75 lbs. Some neat little ball-thrust bearings for small model propellers have also been brought out recently by the same firm.



## FROM ZURICH TO BOHEMIA BY BALLOON.

#### BEING AN ACCOUNT OF THE GORDON-BENNETT BALLOON RACE, 1909.

By F. K. McCLEAN, the British Representative.

THE Gordon-Bennett Balloon Race started this year from Zurich, in consequence of Col. Scheck's victory of last year. Mr. Griffith Brewer had been chosen as the Aero Club pilot, but was too ill to take part, and Mr. Frank McClean being next on the list, secured the

coveted honour of starting for Great Britain.

By great good luck Mr. Mortimer Singer had just had built a 78,000 cub. ft. balloon of Continental fabric, and he being a most capable pilot, having had a thorough training at it, both abroad and in England, was invaluable as an aid. The "Planet" had only made one trip previously, and its equipment included every possible necessity for a long-distance trip. It was taken out in charge of Mr. Oswald Short and remained in his care till the actual start. From the arrival at Zurich till Sunday, when the race took place, everybody was as busy as could be. Food and drink had to be arranged for, as well as the many small things that always arise at the last moment. By the kindness of the Swiss Aero Club every possible help was received, but it is to Mr. Zweipel, of Wettingen, that the greatest thanks are due, for he was always at the disposal of the English members when there was anything to be done, and his 60-h.p. Fiat car was devoted entirely to their service. Right up to "hands off" he interpreted their wants and often anticipated them.

On the Friday two other balloon races took place in nearly a dead calm. On the Saturday it rained and the ground became a morass, but Sunday morning cleared, and with a medium breeze, hope returned. At 10 o'clock the balloons were nearly all laid out, and at 11 filling began for those that were ready. Mr. Short had the "Planet" well in advance of the others, so that there was no hurry at the last. Many were not ready in time, and the "Cognac," which should have started at No. 7, did not get away tlll much later. The American balloon was No. 6, and the "Planet" (No. 8) followed it. At this stage of the contest we let Mr. McClean take up the

story in his own words :-

"Starting at 3.59 p.m., in beautiful weather, with a gentle wind of 15 or 16 miles an hour, we travelled in a north-easterly direction, and passed low over Kloten and Wulflingen. But the sky behind us was watery, and before long there were clouds in every direction, and the occasional rain that fell was a forerunner of the storm that caught us during the night. We had been warned not to travel too close to the ground, owing to the danger from high-tension electric wires, and we kept our trail-rope up for some distance to avoid possible contact with them. About a quarter-past five we came close to the American balloon in charge of Mr. Mix, and found that they had used 4½ bags of ballast as compared to our 5. This cheered us a little, as we had up to then feared that there was something wrong with the balloon, but we were unable to accept their very kind invitation to come over to dinner. They rose to a considerable height and went ahead, so we tollowed to over 4,000 ft. in order to get the same wind.

order to get the same wind.

"At 6.18, when it was getting dark, we were over the Zeller Zee, an arm of Lake Constance, and were moving in a more northerly direction than any of the other balloons, of which there must have been ten or a dozen in sight. As we were rising, we now had dinner, consisting of cold chicken, cake, pears, and white wine; but before we had finished we plunged into a cloud at a height of 5,200 ft. and a quick drop followed. We finished our thirteenth bag of ballast at 8 o'clock at a height of 3,600 ft. It was raining but fairly clear, and the lights of hundreds of villages twinkled up at us from the ground. But they were unrecognisable one from another, and all we could do was take our direction, which at this time was about 15° north of east. From 8.20, when the moon rose, till 2 o'clock, we took alternate periods of rest. All this time it was

raining hard, and at intervals we were enveloped in cloud. The light from the moon was almost negligible, but we could see enough to mark our direction as about north-east to east-north-east. Till 11.30 the 'Planet' never attained equilibrium, and in order to save ballast we poured away our water, and at every available opportunity threw away food and stores, but only when near enough to the ground to see that all was clear.

"At 11.30 we passed some distance to the north of a large town, which presumably must have been Munich, but at the time we thought we were further north still. Then after trailing over some high ground, when we rose to 7,000 ft. without the use of any ballast, we crossed a large river running north and south, and our troubles began. In front of us was high ground, and the balloon seemed unable to make up its mind on which side to pass it. First it tended one way and then the other, but very slowly, and for nearly half an hour we remained in doubt. Then suddenly we made straight for the highest point and over it into dense cloud. We coalled another valley by the precipitors fell of the balloon. we had reached another valley by the precipitous fall of the balloon, and then the trail-rope touched and another tree-clad mountain rose right in front of us and far above. A bag and a half of ballast only cleared us by some 50 ft., and again we were in dense fog, while the wind whistling through our ropes showed us that we were in another ravine. For over an hour this continued, and when at last we saw land below us, we were travelling at some 40 or 50 miles an hour in a direction only a few degrees from the north. It was this period that upset all our calculations, for we took it that north had been our course all the time, whereas it must have been nearly south to land us where it did.

"With dawn we sighted one other balloon to the north-east of us, but the downpour that followed blotted it out, and we were left in solitude, with a bleak and lake-strewn land below us, through which wound a river in a deep and rocky gorge. This river we followed for hours, at one time clearing it easily, and at another rushing at express speed right into its chasm. All the time ballast was required, for the rain literally beat us down. It poured in rivulets from the rain-band, but much followed down the leading lines, and prevented any possible sleep in the car, which quickly became soaked through and through,

"We had entirely lost our position, as we judged ourselves to be between 100 and 200 miles further north than we were; in fact, we were looking out for the Baltic Sea. Our helief in this was confirmed by the lagoons we passed over at about 8 o'clock, with muddy, sloping banks, and every appearance of being tidal.

"In view of the new rule disqualifying anyone who descends in the sea, we consequently attempted to keep within sight of land.

The view of the new rule disqualifying anyone who descends in the sea, we consequently attempted to keep within sight of land, and when at a quarter to nine we again entered the clouds, we valved sufficiently to drop once more into the open. This was the beginning of the end, for we again came on to the trail, and it was only with the throwing of much ballast that we cleared the next hills. Then after crossing some cultivated land at a speed of not more than 15 miles an hour we plunged suddenly into a thick white more than 15 miles an hour we plunged suddenly into a thick white mist, so thick that we could not see the ground even when our trail rope was touching, and here, although we still had some ballast left, we came to earth so gently that we sat on the same spot till assistance arrived and we were lifted into a patch of grass alongside. A crowd soon collected, among them a policeman with fixed bayonet, but all were good-tempered and willing to help in the packing. Luckily one man could speak French, and he showed us the way to the village, where we got the Mayor to sign the 'Livre the way to the village, where we got the Mayor to sign the 'Livre de Bord.' We were naturally annoyed when we found we had landed far south of our supposed position, and were at Remenin in Bohemia, especially as we could have lasted an hour or two

longer.
"During the storm it is probable that we travelled south instead
"This would account for our very of north as calculated on by us. This would account for our very big error in position, as our speed at that time was tremendous.

'.The greater part of our food and drink had gone overboard,

but the locker remained, and our spare clothes and sleeping sacks, in addition to a certain amount of sand.

"The Bohemians were most delightful people to land among, though somewhat inquisitive. The process of changing one's socks gave them the greatest joy, in spite of all protest. Most of them were barefooted.

"Having got the 'Planet' into a cart, we walked to the house where the Mayor lived, and from there took a carriage to Kopidlno station. Once again difficulties of language arose, but in the end we found ourselves at Prague with the balloon safe, and we celebrated our return to civilisation by a hot bath and a Bohemian dinner.'



## AVIATORS AND THE AUTHORS' CLUB.



Menu Card at the Authors' Club, designed by E. Wake Cook.

VERY interested and enthusiastic was the dinner gathering at the Authors' Club last Monday, when aviation was particularly honoured by the selection of aeronautics as the subject for subsequent discussion. A very representative company assembled under the chairmanship of Mr. Percy White, supported by Mr. Charles Garvice as vice-chairman, the guest of the evening being the Hon. C. S. Rolls, Mr. J. T. C. Moore-Brabazon and Colonel Capper, R.E., also being present.

Mr. Rolls opened the discussion in an entertaining speech. He modestly commenced by saying: "My first experience in flying was to go up with a wallop and down with a thud. Since then my flight has been little more than mere jumps and hops. Rather than an aviator I resemble that funny little animal called a grasshopper. Few realise," continued Mr. Rolls, "how much experience Mr. Moore-Brabazon has had in aviation. He possessed some four machines before many of the now well-known French aviators had had their first. Mr. Brabazon has sacrificed his chances of taking part in the great aviation meetings because of his anxiety and determination to run a British instead of a foreign machine. present is a most interesting stage to live in in the history and development of locomotion, for we have seen the perfection of railways, the introduction and universal adoption of mechanical road vehicles; ships to travel under the sea are now constructed as road vehicles; ships to travel under the sea are now constructed as a standard article in the Navy; and now we are just in time to see the birth of a new form of locomotion, of what might be termed the 'aerial epoch.' This movement has come upon us suddenly, for up till quite recently flying has been looked upon as the recognised standard of impossibility. When you wanted to express to a friend that something was quite out of the question you would say 'You could no more do it than fly.' This would be a risky thing to say now. We who are now flying are apt to call ourselves pioneers, whereas we are merely utilising the brains of the real pioneers, such as Lilienthal, Pilcher, Langley, Chanute, and the Wright Brothers. It is comparatively easy to buy a machine and fly it now that the problem is more or less cut and dried, but insufficient credit is given to those men who persisted in their work in face of disbelief and ridicule, some of them being martyrs to the cause, and at a time when anyone who believed in the coming of flight was looked upon

"The Wright brothers more than any others are responsible for responsible for present successful designs. I had the pleasure of their acquaintance before they came to Europe and before their genuineness was acknowledged. At that time their performances were shrouded in mystery, which, however, was not in any way of their making, for, as was not generally known, they invited the local Press to witness their early experiments near Dayton, Ohio, but because they did not immediately make successful flights the reporters got tired of not immediately make successful flights the reporters got tired of coming out, and put them down as cranks. After that they lived through all kinds of bluff and ridicule, and pursued their work unaffected, and when their capabilities were publicly proved in France last year and they became the admiration of the whole of Europe, they remained equally unaffected. These men have through persistent and systematic study and experiment, which commenced with having to unlearn all they had learned in text-books, accomplished what many men of science have declared and proved on paper to be impossible. To show what heart-breaking work the paper to be impossible. To show what heart-breaking work the brothers Wright went through during two years of continuous experimenting, the total duration of their flights and glides all added together amounted to something under ten minutes. Regarding types, there are numbers of different forms of aero-planes, and numbers of different makes which are being added to daily. Ougstions as to whether propellers should be in to daily. Questions as to whether propellers should be in front or propellers behind, horizontal rudders behind, or elevators in front, are points amongst many others which remain to be settled. Then there is the question of biplane or monoplane. It seems fairly certain that for the moment triplanes or multiplanes will not be successful, and that design will for a little time be limited to monoplane and biplane. It should be remembered that there is no difference theoretically between these two, the principal difference being that the monoplane is slightly more efficient, whereas the biplane lends itself better to mechanical construction. One of the difficulties with experimenters is that whereas a scientist can work at a new phonograph or telephone in a private laboratory and have a lifetime of failures, and only his final success is made public, the experimenter in flying machines, on the other hand, is habitually in the public gaze, and if he tries an experimental addition or modification to his machine the failure thereof is put down to failure of the whole machine. There are, of course, several types of failure of the whole machine. There are, of course, several types of heavier-than-air machines, such as helicopters and those of the flapping-wing variety. The helicopter depends for its lifting power upon horizontal revolving screws, and a large number of inventors pin their faith to this type of machine, which would certainly have a great advantage in being able to rise vertically into the air out of a limited space, but its efficiency is so low that up to the present this type of machine has met with practically no success. With regard to the flapping-wing variety, many people thought that because birds flapped their wings this must be the right principle upon which to construct the mechanical flight machine. Such people forget, however, that nature could not construct birds with fixed wings and revolving propeller - shafts inside them except with probably disastrous results to the birds' internal mechanism. The proof that nature realises the disability she labours under in this respect lies in the fact that she has constructed large animals to walk on the earth the fact that she has constructed large animals to walk on the earth and large creatures to swim in the sea, but she has never succeeded in constructing really large birds to fly in the air.

"Ballooning is essentially a sport pure and simple, but it is not without its utility for scientific observation. The balloon is an invaluable aid to the meteorologist. Ballooning is also an undoubted assistance to those wishing to practise aviation. It taught a man to locate his position from a height, which is always a difficult matter in ballooning. In one case a stationary object which some balloonist shouted to for information turned out to be a scarecrow. I remember on one occasion when we had started from Paris in a balloon we on one occasion when we had started from Paris in a balloon we were in the air at night and saw beneath us a large town. We could not make out what it was so we dropped down to see. When we were about a thousand feet above I yelled through my megaphone in my best French, 'Quel est le nom de cette ville?' We heard the reply distinctly, 'Evereux,' but we read in the next day's French papers a message from Evereux stating, 'Last night at eleven o'clock there came in sight a balloon from which loud cries of distress were heard.' That was the result of my best French. On another occasion a vokel, after listening several times to the question. another occasion a yokel, after listening several times to the question, 'Where are we?' replied, 'Why, you are up in a balloon! Ballooning is also of considerable value to an aviator in teaching him to judge heights and distances as well as the discovery of different

Flight)

currents. In regard to learning to fly, great patience is required. You have to be up at daybreak in order to take advantage of the calms. Then after one or two trials a skid is broken, and by the time it is repaired the wind gets up. The aviator generally alternates between having his machine all ready with a gale blowing and having beautiful weather with his machine under repair. In regard to the future, I am not a great believer in the commercial possibilities of the aeroplane for a long time to come. I am not a believer in the time when you will be able to go into the street and blow four whi-tles for an aero-taxi. Likewise, I am not a believer in the invasion of England by airships, or in the landing of large armies by these means. On the other hand, the fact of having in the air a universal highway all ready made and waiting to be used will undoubtedly prove of great value, and there will be a considerable number of machines sold for sporting purposes. The absence of dust, police traps, and, at present, taxes, would be a considerable attraction, but apart from the sporting side, the real value of flying machines would lie in their military use, where for reconnoitring they will be invaluable. It will practically be no longer possible for an enemy to keep its movements secret.

"My experience of a trip in one of the French Army airships convinced me that dirigible balloons must take an important part in the next European war. They would be useful for dropping explosives, the moral effect of which, however, would probably be greater than the actual damage, while in quiet weather important bridges might be broken up by a few men landing from a small dirigible balloon in the dark and getting away again. Although it has been said before, one cannot too often rub in the fact that, from an aeronautical point of view, Great Britain is no longer an island, for with the German airship stations being established close to the coast, the crossing of the Channel would be a mere incident in the flight of an airship. It has been found to be a far from easy matter to hit a fast-moving airship with a destructive gun, owing to there being no fixed point to go by to find the range, and undoubtedly the best protection against foreign airships is to have them ourselves. A debt of gratitude is due to Colonel Capper, who, with wholly inadequate funds at his disposal, has done much for this country both in actual construction and in the placing of valuable knowledge of foreign airship construction at the disposal of the War Office. One of the difficulties that has made progress in aeronautical matters slow in this country has been that we are primarily a nation of sportsmen; and, whereas in France many rich men can be found who will spend their money on purely scientific matters, the rich men of this country are liable to spend it more on sporting matters than in scientific matters, especially one so impossible as flying was For this reason I would like, in conclusion, to congratulate the Authors' Club on its wisdom and foresight in taking up this subject, for it is only by creating a general interest throughout the country that we can hope eventually to give Great Britain the command not only of the sea but of the air."

Colonel Capper said that down at Aldershot they had been trying to do their best. They might not be very clever or very capable, but they were plodding. In fact they worked hard, although they were very, very slow, and that slowness was due to three things, the want of accommodation, the want of means, and the want of men. However, he hoped this was going to be altered now. The Government were giving a great deal more attention to aeronautics than they had done in the past. It was no secret that the manufacture of aeroplanes was being expedited under the auspices of a well-known civil gentleman. A couple of airships were coming from abroad

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#### Cost of Airship Trips in Germany.

In connection with the scheme for establishing passenger airship services in Germany, some interesting figures have been published by Dr. Eckener, a German engineer, regarding the cost of running a dirigible. He states that a dirigible of the Zeppelin type of about 20,000 cubic yards capacity would want re-inflating once a week, and that this would consume 40,000 cubic yards of gas a month. Taking the cost of gas at 2d. per cubic yard, the cost of the lifting force would be £335 a month, or £2,310 a year, reckoning the actual period of service at six months. He estimates that the two 150-h.p. motors would cost about £1 10s. per hour for fuel, &c., and reckoning that they work twelve hours a day, and that the dirigible is in use on twenty days a month, the cost for six months would be £2,160. The staff on board would consume £1,500, the captain

to be handed over to their tender mercies, and in this way they would be enabled to learn something. England was not always good at initiative, but she was jolly good at picking the foreigners' brains and then going something better. This is what would happen with regard to aviation. That science had come to stay, and it would very largely affect nations in war. He had always felt that if we had something decent in the way of an air fleet our insular position would be even more valuable than it was at the present day. Let it be supposed—a very unlikely supposition—that the British Navy were driven from the seas and that we were liable to be invaded by a foreign enemy. Then if we had a number of dirigible balloons and of those nasty little aeroplanes which would carry a couple of men and some bombs it would be a very daring general who would try to bring his soldiers over in helpless, unprotected transp at ships. Certainly if he did he and his men would have a most unpleasant time. At the same time, he agreed with Mr. Rolls that the enemy were not in the least likely to come over here in balloons or even in aeroplanes. To sum up, there was no doubt that foreign nations were making progress in aeronautical science, and we could not afford to lag behind. We must be somewhere in the front.

Mr. Moore-Brabazon remarked that the guest of the evening was one of his oldest friends. While still at Cambridge he (Mr. Moore-Brabazon) had had the proud privilege of being Mr. Rolls's mechanician on a racing car in Ireland, and he was glad to say that on that occasion they accomplished a world's record. Later on, in that occasion they accomplished a world's record. Later on, in 1903, they started ballooning together when ballooning was quite a new thing as a pastime. In fact, they commanded one of the first private balloons in the country. Now it was his proud pleasure to assist Mr. Rolls in his experiments on the Aero Club ground at Sheppey. They had stood there many a time in the dull, grey morning—for they always rose before dawn—and waited for that race which invariably occurred every morning between the sun and the wind. If the wind got up before the sun there was no flying for them, but if the sun got up before the wind then they did a smash. Mr. Rolls had used that evening a delightful phrase. He had referred to flying as a recognised standard of impossibility. Some years ago, before the Wright Brothers had demonstrated its posssibility, he was trying to build a machine down at Brooklands, and the result was that he was looked upon as an amiable lunatic, one of those men who try to solve impossible problems such as perpetual motion. It required the very strongest heart to go on, and he was afraid he had not that. He went to France, and when he got to France he found everyone very kind and ready to do what they could to help in such experiments as his. The French Government in the most obliging manner placed their military training ground near Paris at his disposal, and did all they could for him in other ways. sorry to say they had never seen that sort of thing in England. It was only now, when flying had been demon-trated to have commercial possibilities, that any attention was being paid to it at all. In England he was afraid they had no encouragement except police traps. Still, when anything became a commercial possibility England was always there. The commercial possibilities of the aeroplane were not, perhaps, so great in an old country like England with its network of railways. It was in newer countries, such as South Africa and Australia, where it would be especially useful for travelling over mountainous and rocky districts, that aeroplanes, he thought, would first establish themselves as a commercial article.

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getting £400, two steersmen £250 each, and four engineers £150 each. A toll of £10 would be paid at each aerial station, and presuming the vessel made 120 voyages, this item would amount to £1,200.

With regard to the sinking fund, Dr. Eckener thinks that although a Zeppelin of this type would last for four or five years, taking into consideration damage, cost of repairs, insurance, and even total loss, the initial cost of the airship, £30,000, should only be spread over two years, so that the cost per year would be £15,000. Adding to these items a sum of £1,000 for management expenses, and £1,500 for unforeseen circumstances, the total yearly expenses would be £24,670, and the cost per voyage £200. Such a dirigible could carry from 25 to 30 persons, and assuming that, on an average, 20 were taken, each would cost £10, and if the company charged a fare of £15 for a voyage of twelve hours they should make a good profit.



## AVIATION NOTES OF THE WEEK.

Cross-Country Flying at Sheppey.

The Hon. C. S. Rolls having decided to shift his quarters from the Aero Club's Shellbeach Aerodrome to the new auxiliary flying ground at Eastchurch, Sheppey, decided to perform the journey on his Wright flyer on Saturday. The distance is only about three or four miles, and after leaving the Shellbeach ground all went well for the first portion of the trip, but after reaching Old Rides Marshes, Eastchurch, Mr. Rolls decided to come down to adjust his elevator. This having been done the flyer was started on temporary rails, and easily accomplished the remaining short distance to the new auxiliary ground at Eastchurch.

#### Motor and Flying Meeting for Bournemouth.

BOURNEMOUTH is anxious to be up-to-date in connection with its centenary celebrations, and it is announced that the Corporation have decided to include in the programme of festivities a motor carnival and an aviation display.

#### A Portsmouth Biplane.

Last Saturday afternoon the biplane which has been constructed by Lieuts. Cochrane and Stocks, of the Submarine Depôt at Portsmouth, was taken out to Gosport for its first trial. Unfortunately, in some way the starting-tackle fouled it just as the machine was rising, and it dropped heavily to earth. Lieut. Cochrane escaped without injury, but the machine was badly smashed.

#### Race Against Tide.

In the early hours of Sunday morning Mr. R. F. Macfie had an exciting adventure on Foulness Island. He had made one or two flights in his aeroplane over the Maplin Sands when the machine was struck by a gust of wind. This blew it heavily on to the sand, and one of the wheels was broken. An endeavour was made to tow the machine by a motor car, but the wheels of the latter only sunk into the sand. Assistance was then sent for at the farm some distance away, and horses arrived just in time to pull both motor car and aeroplane into safety from the incoming tide, which rises very rapidly at that point.

#### Happenings at Wembley Park.

A French aviator has arrived with a Bleriot-Antoinette type of aeroplane, fitted with a two-cylinder 36-h.p. Anzani engine. The machine is beautifully made and is reported to have flown at Issy.

The ground is being cleared and many trees and bushes have been removed.

A. V. Roe was again out on Friday, the 19th inst., with his new 20-h.p. aeroplane, and made several successful flights in spite of the gusty wind, but finally he was caught by a gust when 20 ft. high and struck the ground very heavily before he had time to recover, the machine being rather badly damaged, but he hopes to be out again in a few days.

Steering of the Roe machine is effected by twisting or tilting the main planes in conjunction with the usual vertical rear rudder, and this seemed to work quite satisfactorily, for several times when making flights between the goal posts on the polo ground he was blown out of his course, and promptly brought the machine back again.

#### Juvenile Aerial League.

WITH a view to still further stimulating interest in aviation the Women's Aerial League have resolved to invite British girls and boys to band themselves into a branch of the League. A meeting is to be held during the Christmas holidays, at which the details of the scheme will be announced, and an illustrated lecture given by Mr. Eric S. Bruce.

#### Motor Union Absorbs the Aeroplane Club.

ANNOUNCEMENT is made by the Motor Union that they have resolved to establish an aviation section, and have incorporated the Aeroplane Club. The Committee of the latter Club will form the Aviation Committee of M.U., and the Secretary of the Club will join the staff of the Union.

#### A Catalogue of Aeroplanes.

UNDOUBTEDLY the Aeroplane Supply Co., of 111, Piccadilly, can safely claim to have produced the first complete aeroplane catalogue, for the price-list they have just issued is about as good as it could be made at the present time. It includes full specifications and prices of the Farman, Bleriot, Antoinette, Santos-Dumont, Voisin, Curtiss, Cody, and Wright machines, and various engines suitable for use on flyers. Each one is illustrated by photographs of the machine and its inventor, together with a descriptive sketch, and a small reproduction of the working drawings, which have proved to be such a popular feature of FLIGHT. In addition to complete machines the catalogue also contains particulars of various parts, such as lugs, pulleys, and spars, and the various materials required for building a flyer. Altogether the compilers are to be congratulated on having produced a wonderfully complete catalogue.

#### Two Pilots on One Machine.

An interesting experiment was carried out by Farman and Paulhan at Chalons last week, which showed that it should be quite possible for two pilots to go up on one machine and relieve one another of the charge alternately. Paulhan took his place behind Farman, but he found it quite possible to manipulate the levers, &c., and, in fact, he controlled the descent. In view of this there would appear to be no difficulty with regard to long distance journeys except those necessary descents for petrol, &c.

#### Latham Flies to the Shoot.

A REMARKABLE exposition of the practicability of an aeroplane was given on Tuesday by Mr. Latham, when he flew from Chalons Camp to Berru, near Rheims, a distance of close on 20 miles. He had been invited to shoot with a party at the Marquis of Polignac's house, and determined to travel by aeroplane. Putting his gun and cartridges alongside him, Mr. Latham started off and in about half an hour came to rest in front of his host's house, just in time for lunch. After enjoying a few hours with the birds he once more got aboard his monoplane, and taking with him some of the spoils of the afternoon's sport flew back to his shed at Chalons in about twenty minutes, the speed being greater owing to the wind being with him instead of adverse as in the morning.

#### Doings at Chalons.

APART from the doings of Farman, Paulhan and Latham at Chalons, there have been several minor



happenings of interest during the week. Mr. Henry Rawlinson has been continuing his lessons, and on the 17th the Duke of Westminster arrived to have some instruction in the manipulation of a flyer. Kuller, one of the Antoinette pupils, has made good progress lately, and on the 20th twice flew round the camp, while Kimmerling, a Voisin pupil, flew for 1½ kiloms. On Monday last, Latham had a busy day, during which he made 22 circuits of the camp. He took up nine passengers, viz., MM. Wachter, Sanz, Sommersel, Valton, Burgea, Brumhuler, Veziers, Mdlle. Marwingt, and Miss Dorothy Levitt.

#### Practice at Issy.

RICHER, who it will be remembered met with a serious accident while practising with the Voisin machine which originally belonged to the late Capt. Ferber, has now quite recovered, and on Sunday was back again at Juvisy, but contented himself with running along the ground. On Monday evening Count Lambert had his Wright flyer out, intending to make a long flight, but in view of the strong wind decided not to go up; but Ladougne, on the Goupy biplane, made one or two rounds of the course.

#### De Caters in Russia.

During last week Baron de Caters was giving exhibition flights at St. Petersburg, and had rather an exciting adventure on the 18th inst. Although it was raining hard, and there was a strong wind blowing, he was making a good flight, when, in negotiating a difficult turn he found himself confronted by a group of policemen, who in their devotion to duty refused to leave their post. In order to avoid injuring them, Baron de Caters had to turn sharply to the right, and landed on the railings. He was unhurt, but the machine was badly damaged. The crowd cheered the plucky aviator for his presence of mind.

#### Mr. Farman and the Voisin Frères.

In view of the misconception which exists regarding the relations between Mr. Henry Farman and the Voisin Frères, it is interesting to note some correspondence which has appeared in a French contemporary. In this Mr. Farman points out that he has never been employed by MM. Voisin Frères, but was a client of that firm, ordering and paying for his machines in the ordinary way. After obtaining his machine it was only by long and patient experimenting and transforming the machine he succeeded in getting it to fly to his satisfaction. He then ordered from MM. Voisin Frères a machine made to his own specification and embodying the result of his own experiences, and not only so but took upon himself the full responsibility with regard to the good or bad working of the apparatus. Mr. Farman points out that MM. Voisin Frères have profited largely by his experiments, inasmuch as their new machines embody many of the modifications suggested by him, so that he cannot be accused of having copied the Voisin machine, but rather the facts tend to show that the opposite is the case.

#### Rougier and his Berlin Winnings.

An unpleasant sidelight has been thrown upon the financial methods which prevailed at the Berlin flying meeting, by an interview with Rougier, who has recently been in the German capital trying to get his prize-money. Altogether he won £3,200, but the Managing Committee wanted him to accept £600, and eventually Rougier had o agree to accept £1,000 in settlement of his claims.

#### Flyers at the Stanley Show.

Or the flying exhibits at the Stanley Show only two were of full-sized machines, and one of these was a model of the Bleriot cross-Channel flyer, while the other was a monoplane shown unfinished by Mr. Geo. A. Barnes. The model of the Mills-Fulford monoplane, of which photos appeared in our last issue, was also on view. On the stand of Sheila O Neill and Co. were shown models of the biplanes and monoplanes which are to be built by this firm, and which embody several novel features. Two stands were devoted to model flyers, Messrs. T. W. K. Clarke having a most effective display of their little monoplanes in the Gilbey Hall, while in the North Gallery Annexe Mr. Chas. B. Timperley exhibited a number of well-made models of various types of flyers of the Antoinette, Bleriot, and Wright type.

#### Ae.C.F. Doings.

At their last meeting the Aero Club of France decided to give their patronage to the flying week which is to be held near Cairo from February 6th to 13th next. Pilote-aviateur certificates were granted to MM. Henri Rougier and Maurice Farman, while a pilote-aeronaute certificate was given to Mr. Albert Boivin.

#### Aviation in Egypt.

The Automobile Club of Egypt is resolved not to be behind the times. It has been decided to organise a flying meeting, to take place during next February, at which about £6,000 will be distributed in prizes. Two of the prizes will be of £2,000 each, while there will be ten of £200 each. The aerodrome will probably be at Heliopolis, some few miles from Cairo.

#### To Fly Round the Pyramids.

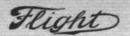
THE "Land of the Pharaohs" is to be introduced to the most up-to-date method of locomotion, as Gobron has decided to spend the winter there and to continue his experiments with his Voisin machine. He left during the week for Cairo, and his ambition is to fly round the Pyramids. He believes he will find the desert an ideal flying ground, and no doubt his experiments will whet the appetite of the Egyptians for the meeting which is to be held at Cairo next February.

#### New German Prizes.

WITH a view to still further stimulating activity among German inventors, Dr. Carl Lanz, of Mannheim, has offered two prizes of 10,000 marks and 7,000 marks for the next two German flyers who on German-built machines succeed in duplicating the performance of Herr Grade with which he won the original Lanz prize of 40,000 marks. The Kaiserlicher A.C. and the German Aero Club have also offered three further prizes of 2,000, 1,500, and 1,100 marks respectively, to be competed for under the same conditions.

#### Wright Company in America.

ARRANGEMENTS have now been made for the exploitation of the Wright patents in the United States. A Company, having a capital of £200,000, has been formed by some of the most eminent American financiers. Mr. Andrew Freedman is chairman of the executive, which consists of Messrs. Cornelius Vanderbilt, Theodore Shonts, Howard Gould, August Belmost, E. Birwind, R. Collier, and Allan Ryan. It is stated that Wilbur Wright will be appointed President, while Orville Wright will be a Vice-President and officiate as treasurer, and



Mr. Peterkin will be another of the Vice-Presidents. A factory has been organised at Dayton, Ohio, where the flyers are being constructed in various sizes to carry one, two, or three passengers. During the winter the Company will have a flying ground in Florida, where customers will be able to secure instruction on their machines, and in the summer months the school will be shifted further north.

Flying at Argentina.

INTEREST in flying matters seems to be forging ahead very rapidly at Buenos Ayres, and very shortly now there will be two Bleriot monoplanes and a Voisin biplane. Messrs. Dorna and Madariaga have ordered one Bleriot which is due to arrive within a few days, and Mr. George Newbury will own the other, while the biplane has been ordered by Mr. Anchorena. In addition to these the Argentine Aero Club, in conjunction with the Sociedad Sportiva, are arranging for the importation of a Wright machine.

#### "The Patent Road to Fortune."

Under this heading a concise little book of 56 pages has been brought out by an author, who disguises his identity under the non de plume "A Successful Traveller on It." Therein is contained, in an eminently useful form, just that elementary knowledge concerning the present patent law and the process of patenting an invention which so many inventors need when they do not happen to have had much previous experience of the routine which has to be followed. The price of this book is but 3d., and the London agents for it are Messrs. Brown and Sons, of Farringdon Avenue, E.C.

#### Interviewing in Mid Air.

M. Georges Prade, the well-known French writer, claims to be the first to have "interviewed" anyone whilst actually in flight on an aeroplane. On the last day of the Berlin Meeting he made an ascent with Rougier, and the details gleaned from that intrepid high flyer at a height of 70 metres from the earth were told in M. Prade's usual brilliant "style in a recent issue of our French contemporary, which M. Prade controls.

#### Oilskins for Aviators.

In all that appertains to the art of flying, it is a sine qua non that weight should be reduced to the minimum, and the aviator, even in the matter of clothes, will see to it that he is not burdened unnecessarily. Very often rain or penetrating mists will be encountered in the course of long flights or balloon journeys, and for a safeguard against this element, it is difficult to conceive anything more suitable than one of the silk oilskin coats made by the Scottish Aeroplane Fabric Co., of Ardrossan. These coats are made from pure Jap silk, and are astonishingly light, weighing only from ten to twelve ounces. The material can be dyed any colour, and although the price is naturally dearer than the ordinary waterproof coat, it is not expensive, as the garments cost from 40s. to 45s. each. In addition to the merit of lightness, this new introduction has the further advantage of compactness. The ordinary oilskin coat is very bulky, but the silk one can easily be folded into an envelope the size of this Journal.



Photograph of a built-up propeller, 7 ft. in diameter, recently supplied by Messrs. T. W. K. Clarke and Co. It will be noticed that the straight marking of the grain shows up clearly in this view.

# RECORDS AND COMPETITIONS.

#### Height and Distance Records.

THE Ae.C.F. have added to Paulhan's record for the *Tenue de l'Air* prize his flight of 155.027 kiloms. at Brooklands, and also passed Farman's record of 234.212 kiloms. for the Michelin Cup.

#### A German Record.

On Monday week, Herr Grade succeeded in setting up a very good duration record for Germany, and it was a pity that he only missed making an hour's flight by six minutes. The record of 54 minutes, however, is a very good one. During the flight he occasionally rose to a height of 100 metres.

#### High Flying Indeed-New Records.

In spite of a strong wind blowing somewhere about 20 to 25 m.p.h., and the very cold temperature, Friday afternoon at Chalons Camp was a very interesting time, for Paulhan achieved his ambition of still bettering his world's altitude record, although he held it only for a quarter of an hour. Paulhan had entered for the Lazaire-Weiller prize, and set off about 3 o'clock. Gradually fighting his way against the wind, he mounted higher and higher until he was 360 metres (1,150 ft.) above the earth. He then landed without the slightest trouble, and within a few minutes Latham, on a new Antoinette, although not entered for the prize, determined to try for the world's record. The wind made his flight almost as spectacular as that at Blackpool, and keeping on his way, finally was officially recorded to be at a height of 410 metres (1,330 ft.). That dizzy altitude was then, therefore, the world's record, and took the place of Paulhan's, made a quarter of an hour previously, which in its turn supplanted Count Lambert's Eiffel Tower record; but, as will be seen by the following, Paulhan regained the honour the next day.

#### Cross-Country High Flying By Paulhan.

On Saturday, Paulhan again made a couple of note-worthy performances by flying from Chalons Camp to the town of Chalons some distance away, and by ascending to a height of 600 metres (1,960 ft.). There he circled round the Cathedral tower and over the town, and by the time he returned to his starting place a distance of about 50 kiloms. had been covered in the time of about 50 mins. In the course of his flight Paulhan reached a very great height, which was estimated to be even higher than that attained by Latham on the previous day. Earlier in the morning Paulhan flew to Mourmelon and round the clock tower there; and in the course of this flight he was officially recorded to have attained an altitude of 600 metres, twice the height of the Eiffel Tower.

## AIRSHIP NEWS.

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#### "Gross III" Completed.

THE German Army now has a third dirigible of the "Gross" type, the construction of which has just been completed. The envelope, which is 94 metres long, and has a capacity of 7,500 cubic metres, was inflated on Monday, and the airship will shortly undergo her official trials. It is fitted with four Korting motors, which develop collectively 300-h.p.



## CORRESPONDENCE.

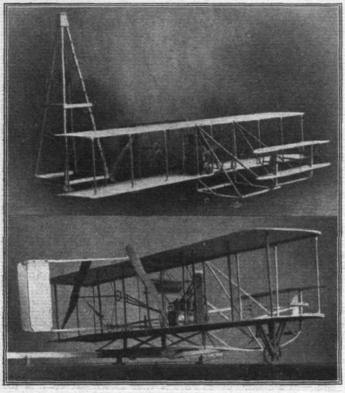
\* \* The name and address of the writer (not necessarily for publication) MUST in all cases accompany letters intended for insertion, or containing queries.

#### A QUERY AND A MODEL,

To the Editor of FLIGHT.

SIR,-In'your plans of the Antoinette monoplane, recently, will you please tell me how the front strut is affixed to the hull-shaped body of the machine and if it gives in any way or is suspended.

I have pleasure in enclosing photo of a model Wright machine, with starting derrick, I have just made. The machine is complete with warping mechanism to planes, &c.



Thanking you for information received from you in the past, Yours faithfully, C. H. CRITTENDEN.

\* [We give a sketch, explaining the point raised, on p. 762.—ED.]

#### MODEL SPRING MOTOR WANTED.

To the Editor of FLIGHT.

SIR,-Will any of your readers kindly inform me if a spring motor weighing 6 ozs, would be too heavy for a model Farman biplane, scale 1 in. to 1 ft.

The main planes are about 33 ft. by 6 ft. 4 ins., total area of

plane surfaces 410 sq. ins.

If so, what would be the best means of driving it?

Thanking you in anticipation,

Cheltenham.

Yours truly, H. HIGGINS.

#### RUBBER-TYRED WHEELS.

To the Editor of FLIGHT.

SIR,-In the November 13th issue of your excellent paper, I see Vivian B. Learoyd asks for a house supplying rubber-tyred wheels. If he would look amongst the advertisements he would see the name of J. Bonn and Co. advertising them. The Cochrane Propeller Co. are also advertising the plain aluminium wheels from I to 41 ins. in diameter.

New Brighton.

Yours truly, HORACE ROBINSON.

#### To the Editor of FLIGHT.

SIR,-It may interest your readers to know that we are in a position to supply wheels, complete with rubber tyres, suitable for aeroplanes, measuring 700 by 90, 700 by 55, and 350 by 35 mm.

As you are no doubt aware, people experience considerable

Hampstead.

difficulty in procuring these goods, and we feel sure they will appreciate learning that they may obtain them promptly from us. Yours faithfully,

10, Dean Street, Oxford Street, W.

EYQUEM'S PATENTS.

#### A GEARLESS SPRING MOTOR FOR MODELS.

To the Editor of FLIGHT.

SIR,-Being a constant reader of your excellent paper, I have noticed from time to time reference made, in the correspondence columns, to the want of a clockwork motor for models. I have recently perfected for such purposes a self-contained all-metal light motor, particulars of which might be of interest to your readers.

The motor is a departure from the usual clockwork type, since it contains no wheels, pinions or gearing of any kind, thus eliminating all friction in transmission through a train of wheels, and the extra weight required to carry same. It is perfectly balanced, and has only one long central bearing forming the axis of rotation. the whole motor constitutes a fly-wheel, with hardly any effective weight at the start, but gradually increasing in effect as the motor runs down, until towards the end, the total weight of the motor, excepting the thin outer casing, becomes a fly-wheel running perfectly free on the two pivots supporting it in the casing. This feature enables the motor to maintain a uniformity of speed, right to the end, not possible with clockwork or rubber strand motive power, and after the motor is run down, the propeller receives an additional number of effective revolutions from the energy stored in the free fly-wheel.

The construction of the motor has been brought down to an extreme of simplicity. There is not a single screw used in it, and the whole thing can be taken apart in a few seconds with the thumb and fingers only, without requiring an implement of any kind. There are the fewest pieces, and those mostly interchangeable with one another.

The size of a 100-revolution motor is I in. by  $I_8^1$  in. diam. over the casing, and it weighs about  $I_8$  oz. The weight to give higher revolutions to any number comes out at \( \frac{2}{3} \) oz., and under, per 100 revolutions. The power contained in these, the lightest type, is I oz. pull at 2½ in. to 3 in. leverage; a much greater power can be obtained at a very slight increase in weight. I have adopted this method of gauging the power since there appears to be no standard system of ascertaining the motive force used in models.

In a future issue of your paper, if you would be kind enough to allow me a little further space, I will give details of the simple principle embodied in it.

Yours faithfully,

#### FOR TESTING PROPELLERS.

To the Editor of FLIGHT.

SIR,-In the course of some work I have been closely engaged upon lately, in connection with aerial propellers, one of my worst difficulties has been that of measuring with reasonable accuracy the relative powers absorbed, velocities attained, and pressures produced by various modifications of propellers.

No doubt many of your inventor readers have been and are similarly situated, and some of them will probably be glad to hear of a possible means of ascertaining the efficiencies of their contrivances.

I am about to set up an installation in London, comprising a 16-h.p. motor, a head-stock and gear-box to carry and drive either single or twin propellers in opposite directions at varying speeds up to 2,500 r.p.m. These will be mounted on a very free moving traverse, and the reactive thrust of the propellers will be read directly upon a spring balance. The power absorbed and the speed will also be noted. The propellers may be up to 6 ft. in diameter.

If any brother inventors would like to see their propellers running under conditions such as these in order to ascertain their real mechanical value, I shall be pleased to help them, on the understanding that they will pay the cost of the desired experiments and meet all risks.

I must stipulate that only patented, or at any rate, provisionally protected, inventions are to be brought forward.

Perhaps you will kindly receive and pass on any communications on this subject. I hope, too, that in due course some of the inventors will concur with me in asking you to be present on the occasion of the trials.



## CROSS-CHANNEL BALLOONING (MR, P. SOUVESTRE'S TABLE).

To the Editor of FLIGHT.

SIR,—I notice that you desire to have particulars of cross-Channel voyages by balloon for Mr. Souvestre's table when re-published; so I enclose particulars of the three which I have made.

Date.	Departure and Balloon.	Descent.	Distance.	Time.
1908,	Chelsea, "La	St. Omer,	125 miles.	4 hrs. 15 mins.
	Mascotte '		Mr. John Dun Gardner	ville, Mr. Philip
1908,	Chelsea,	Baelen Usines,	255 miles.	11 hrs. 5 mins.
Nov. 21	"Banshee"	Belgium	Mr. and Mrs.	John Dunville, Pollock, Mr.
	Chelsea, "Banshee"		485 miles. Mr. John Dun	

Yours truly,
JOHN DUNVILLE.

#### To the Editor of FLIGHT.

SIR,—I have pleasure in giving particulars of my cross-sea balloon voyages.

I note that most of these trips are made on occasions of private

ascents, which I frequently make with passengers.

The enjoyment and interest of such a trip is in many cases enhanced by the piquancy which the risk of crossing the sea adds to the experience, although it is not often we make such long voyages.

Cross-Sea Balloon Voyages by Percival Spencer, Aeronaut.

Date.	Start.	Descent.	Passengers.
Feb. 8 1898,	Crystal Palace. 11 a.m. Crystal Palace. 11.45 a.m.	court. 3 p.m. St. Romaine, near Havre. 4 p.m.	George Griffith (Pear- son's Magazine) Lawrence Swinburne (Daily Chronicle and Times)
July 29	2.30 p.m. Dover. 10 a.m	Woincourt, near Tre- port. 8.50 p.m. St. George's, near Gravelines. 12.30	C. F. Pollock Patrick V. Alexander
Nov. 10 1905, Aug. 30 1906, Feb. 20 1906,	Man. 1 p.m. Wandsworth Gas Works. 12.30 Wandsworth Gas Works. 2.15 p.m. Wandsworth Gas	p.m. Auldgirth, near Dumfries. 5.30 p.m. La Delivrande, near Caen. 8.30 p.m. Samer, near Boulogne. 5.45 p.m. Nevy, near Lake of Geneva. 7.30 a.m. 402½ miles distant	Frank Hedges Butler Mrs. Griffith Brewer, Frank H. Butler A. Leslie Bucknall

Yours faithfully, PERCIVAL SPENCER.

#### AMATEUR MODEL CLASSES.

To the Editor of FLIGHT.

SIR, —In reply to Mr. Fleming Williams' criticism of my letter re amateur-built model class in a previous issue, I may say that I did not expect it would bring such an honest open-minded reply as the one from Fleming Williams.

In the first place he wants to persuade the amateur to buy a

In the first place he wants to persuade the amateur to buy a manufactured model, and by introducing a few of his own ideas and a few of someone else's enter it in competition as an amateur-built model!

Then he goes on to suggest that I make an original flyer of my own. Perhaps he means on the above lines. Now, then, to clear myself from that accusation (to put it in his words), I may say that I have made two models, a biplane and a monoplane, both first-class flyers, and, what is more to the point, perfectly original. The motive power is electricity, each being fitted with a small but strong motor connected to a 6-volt accumulator, which, by means of trailing wires, drives the propellers at the rate of 1,000 r.p.m. I might also remark that I have not made my models with a view of demonstrating their capabilities before certain manufacturers, but, like the majority of the readers of FLIGHT, for the pure interest and satisfaction model making affords.

Now, to return to the point. My letter in the previous issue was not aiming at the individual model maker, but at the model societies throughout the country; and I am pleased to see that it has been taken up by the Secretary of the Blackpool and Fylde District Aero Club, Mr. Jack Kemp, whose letter appears in last week's issue; and I feel certain your readers will agree with me in wishing the Blackpool Aero Club a successful evening's sport; and if other clubs and societies follow their lead, I am sure they will find that the amateur-made model, both in originality and design, is far ahead of the manufactured toys at present on the market.

ahead of the manufactured toys at present on the market.

Trusting that I have made myself clear to Mr. Williams as to the object of my letter in the previous number, and wishing FLIGHT

the success it deserves,

Bootle.

I am, yours sincerely, P. McKeown.

#### THE INTER-CLUB "CONFERENCE."

To the Editor of FLIGHT.

SIR,—As one who was present at the Conference on Wednesday last, I should like to pass a few remarks upon certain points which I do not think were made sufficiently clear.

The principal question is, are the provincial clubs going to affiliate with the Aero Club in order that this country may be adequately

represented on the F.A.I. or are they not?

If they are, I gather the Aero Club is quite willing to meet them

on minor points.

If not, they will conceivably form a "National Council" among themselves; but, whether such council represents five clubs or fifty, the Aero Club will still remain the United Kingdom's representative on the F.A.I. They do not seem to understand that, in order to transfer the authority now held by the Aero Club to this proposed council, the entire constitution of the F.A.I. must be changed.

British aviators to-day can all but be counted on the fingers of one hand, and they are all members of the Aero Club. Can the provincial clubs expect to control a sport of which they have as yet no practical experience? Their wisest plan, no doubt, will be to accept the Aero Club's terms (with possible minor alterations) for two years, and then, when they know their subject and their own minds, to meet again to consider the question.

Aviation is vastly bigger and more serious than they wot of. Moreover, provided the air is acknowledged and maintained as a free highway for everybody, it will eventually become a guarantee

for International peace—but that is another story.

Yours faithfully, FLUG.

#### To the Editor of FLIGHT.

SIR,-At a meeting at the First Avenue Hotel, last week, of the Aero Club and representatives from other clubs from various parts of the Kingdom, and conformably to the ideas of my club (the Blackpool and Fylde District), I adopted the North Country maxim, "hear all, say nowt." As an individual, however, I should like to relieve myself by saying that, assuming that a central body of control is necessary for national and international purposes, I can think of no body so eligible as the Aero Club, whosoever might be elected or selected as a National Council. Difficulties of such selection would be great, and after being made we have no guarantee of its fitness for the purposes for which it would be constituted. On the other hand, in the Aero Club we have a body of men who have sprung together spontaneously, who are fitted by instincts, previous experience, and general conditions for the highly important work to be undertaken. They are ready to hand, and have shown their capability of handling matters satisfactorily, and from the tone which their members adopted at the meeting they were evidently prepared to act in a fairly democratic spirit with regard to other clubs scattered about the kingdom. It is my very decided opinion that no time should be lost in putting this club, democratised by affiliation with other clubs, at the head and front of our national aviation, so that we may at once take our position amongst nations in this the most stupendous material movement and advance in the history of creation and evolution.

Yours truly,
Preston. JAS. WALMESLEY.

#### TRANSMARINE BALLOON VOYAGES.

To the Editor of FLIGHT.

SIR,—In your interesting record of long transmarine aerial voyages, I see no mention of the fact that in the Franco-German War in 1871, one of the French balloons, from Paris presumably, landed in the Norwegian mountains near Drammen, about 35 miles from Christiania. I know nothing of the details, but when we were staying at Drammen some four years ago with Norwegian friends, our hostess, an elderly Norwegian lady, told us that she remembered the circumstances well, and the bewilderment both of the travellers

light)

and natives. It is very likely that such an incident may have escaped general notice at a time when the eyes of Europe were all turned to the beleaguered Paris. The aerial voyage must have been a record for that time, but the voyagers would naturally think more of making their escape than of breaking the record, and the comparative isolation of Norway at that time would account for its not being generally known. I hope to get some further details from Norway as to the exact date, &c., of this remarkable journey, which I will send to your paper if of sufficient interest.

I am, yours faithfully,

Grantown-on-Spey, N.B. E. HOBHOUSE.

. [Mr. Souvestre's table only purported to refer to Channel crossings, but the facts of the Norwegian transmarine voyage, if obtainable by Dr. Hobhouse, would be welcomed, no doubt, by a number of our readers.-ED.]

#### A HOME-MADE ANEMOMETER.

To the Editor of FLIGHT.

SIR,—I am sending you a rough sketch of a home-made anemometer I have made, and I thought that some of your readers would care to know how I made my

I made it out of a piece of \$\frac{5}{16}\$-in. glass tube about a foot long, bent as shown, the one end projecting about

the interval of the shield which I made
of wood about 4 ins. × 4 ins.

The next thing to do was to pour some benzine or
petrol into the tube and to construct a scale. The

pressure due to the wind is shown to be equal to k V<sup>2</sup>, and as the press  $P = \rho h$  ( $\rho$  = density of liquid in lbs. / cu. ft., h = height in feet between the two

we simplify this,  $h = V^2 \times \frac{12 \times .0023}{62.25 \times sg}$  (sg = specific gravity of liquid, V = velocity of wind in ft./sec., h = height in *inches* between menisca). If a liquid having sg = 770 is used these figures may be of use,

as I have already calculated them for my own use :-

m.p.h. h. m.p.h. m.p.h. h. .0306 15 ... '276 20 ... '49 5 ... 25 ... 10 ... 126

sg = .770, water = 1.000. If water is used the following are the heights:—

lowing are the m.p.h. h. '215 h. m.p.h. m.p.h. h. 5 ... -15 ... 25 ... '595 20 ... '382

I find water is the least satisfactory, as the tube is never quite clean; and so there is sticking, due to the surface tension of the water.

West-Bromwich.

Yours truly, NORMAN J. BOWATER.

#### PROPELLERS.

To the Editor of FLIGHT.

SIR,—I herewith beg to hand you for publication a sketch and description of a propeller which I have recently invented, and which, I think, will be of interest to your readers.

As an alternative to the propellers and tractors of the screw type now used on flying machines, I herewith enclose you a sketch of a

returning they are contracted to a minimum. The appended sketch is sufficiently clear, I think, with a brief description, to explain itself. Referring to the sketch, the outer points of each vane, A, are suspended from the separate points, A A A, while the inner point of suspension, B, is common to all the vanes. The outer points of suspension, A, rotate around the inner points of suspension, B, by means of the arms, C. These arms are secured to a hub, D, to which is secured the means of driving. The hub, D, revolves on the shaft, marked E. To the shaft, marked E, is secured the crank-arm, J, to which all the inner points of suspension of the vanes are attached. To transfer the elevating to a propelling motion, or vice versa, the shaft, E, is only required to move through an angle of 90°, and it forms the axis for the hub, D, to revolve on, and also a foundation for the structure of the flying machine to be The flexible vanes could occupy the whole of the distance from point of suspension, A, to point of suspension, B, or they could occupy any intermediate distance between these two points, i.e., as shown in the sketch with single and double etching. The various applications of this idea are too numerous to mention here. Any number of vanes can be employed, and also they can be any length. The idea is fully protected.

Castle Dock, Northwich.

Yours faithfully, ALBERT YARWOOD, A.M.I.N.A.

#### MODEL PETROL AND STEAM MOTORS, To the Editor of FLIGHT.

SIR,-In your issue of the 6th inst. I note an inquiry for a small petrol

we have just built a small petrol engine for an experimental aeroplane (photograph enclosed), the particulars of which are as follows: -bore, 13 in.; stroke, 2 ins.; revs., about 2,000 on a 1 ft. 6 in. Cochrane propeller; weight of engine, 5 lbs.; outside fly-wheel, 6 lbs. The running of the engine was The running of the engine was perfectly satisfactory, and gave no signs of over-heating.

No doubt this engine would be useful to some of your readers, and I should be glad to forward drawings, &c., on

receipt of inquiry.

I am, yours faithfully, H. W. PORTER.

Newbury.

Coventry.

To the Editor of FLIGHT.

SIR,-Referring to a letter published in FLIGHT about small petrol motor, we can supply a 11-in. bore, 11-in. stroke motor, weight 3 lbs., speed running light 2,300, driving a 16-in. propeller 1,400. We guarantee this engine to do the above, and the weight is never over what we state; price is £2.

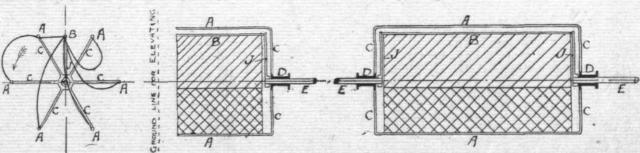
Hoping this may be useful to some of your readers.

Yours truly,

THE S. AND P. ENGINE Co.

To the Editor of FLIGHT.

SIR,—Re your correspondent's inquiry as published on the 6th inst., we have pleasure in stating we have produced and are makers of a steam engine, using superheated steam, which is fully equal to the work he specifies, in fact we test the engines with an 18-in. two-bladed propeller, and are at present testing an 18-in. Cochrane propeller against it.



GROUND LINE FOR PROPELLING.

propeller and tractor which has an advantage over the former, by giving an elevating as well as a propelling motion. The idea is to suspend flexible vanes in such a manner that during the period of motion in which they are doing useful work, they are expanded to a maximum, and during the period of motion in which they are

Our engines have three cylinders and a flash steam generator, and weigh complete, including engine, generator, water, and water tank and pump, all connected ready for fixing to plane, 4 lbs. 2 ozs. We should be glad to supply your correspondent with any further particulars.

Yours faithfully, THE ENGINEERING AGENCIES Co.

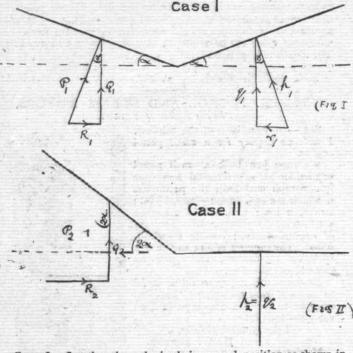
19, Camden Street, Liverpool.



#### THE DIHEDRAL ANGLE.

To the Editor of FLIGHT.

SIR,-With reference to the recent discussion on the dihedral angle in your issue of October 30th, might I be permitted to say a few words in order to clear up the point once and for all. To reply to Mr. Kemp first, I say that the question of moments does not enter directly into the problem, and I quite agree that if we only look upon it as he has done, and he has considered the point O, as being fixed, and such it always is relative to the planes, then by his proof there is absolutely no lateral stability obtained by the use of the dihedral angle. But to look at it from the point of view of moment alone is not correct, and if we resolve the pressure upon the planes into two directions at right angles we get a much more satisfactory solution, as I will now try and show.



CASE I .- Let the planes be in their normal position as shown in Fig. 1 (the angle is exaggerated for the sake of clearness), and let  $\alpha$ be the angle of inclination of each plane to the horizon.

Then resolving the forces P1 and p1 into the horizontal and vertical directions, we get

Vertical component of  $P_1 = Q_1 = P_1 \cos \alpha$   $p_1 = q_1 = p^1 \cos \alpha$ Horizontal component of  $P_1 = R_1 = P_1 \sin \alpha$   $p_1 = r_1 = p_1 \sin \alpha$ 

As in this case  $P_1=p_1$  and  $\alpha$  is the same for both planes, we get a condition of equilibrium, but in Case II this is not so.

Case II.—Now imagine the planes to have turned through an angle  $\alpha$  so that the left-hand plane makes an angle of  $2\alpha$  with the horizon, then,

Vertical component of  $P_9 = Q_2 = P_9 \cos 2\alpha$ Horizontal component of  $P_2 = \overline{q_2} = \overline{p_2}$   $p_2 = \overline{q_2} = \overline{p_2}$   $p_2 = \overline{p_2} = \overline{p_2} = \overline{p_2}$   $p_2 = \overline{p_2} = \overline{p_2} = \overline{p_2}$ 

Now I think it is quite evident that  $P_2 \cos 2\alpha$  is less than  $P_1 \cos \alpha$ , if we imagine for the moment that  $P_1 = P_2$ , for as the angle increased, the cosine decreases, and so  $\cos 2\alpha$  is less than  $\cos \alpha$ . Now on the other plane the control that  $P_1 = P_2$ , for in the other plane the control that  $P_1 = P_2$  is the release of the plane that  $P_2 = P_2$  is the plane Case II, as the plane is horizontal, the angle it makes with the horizon is = O, and therefore the cosine has its maximum value, viz., 1. ...  $p_2$  is greater than  $p_1 \cos \alpha$ , provided that  $p_2 = p_1$ . So we get a force equal to  $(P_1 \cos \alpha - P_2 \cos 2\alpha) + (p_2 - p_1 \cos \alpha)$  tending to turn the planes into the normal position. But as  $P_2$  is not equal to  $P_1$ , for in going round a curve the outer wing moves quicker than the inner one, and so causes the pressure on the former to be greater than the pressure on the latter, causing the whole machine to tip up towards the position shown in Fig. II, then the turning tendency acting against the righting tendency is given by  $(P_2 - P_1) + (p_1 - p_2)$ . So in order to get lateral stability  $(P_1 \cos \alpha - P_2 \cos 2\alpha) + (p_2 - p_1 \cos \alpha),$ 

must be greater than  $(P_2 - P_1) + (p_1 - p_2)$ ,

The horizontal forces in the first case just balance each other, whilst in the second case they give rise to a force  $P_2 \sin 2\alpha$ , tending to push the whole machine towards the inside of the curve, and are balanced by and help to neutralise to a considerable extent the centrifulgar force which comes into play on turning.

Looking at the problem from Mr. Olley's point of view, it would most certainly appear that we should get a small force, F, as he shows, but I think if it occurs at all in practice it is much smaller than we should expect it to be, and as it would be acting directly opposite to the centrifulgar force, which is bound to be of considerable magnitude, its effect could never be seen or felt.

With apologies for taking up so much of your valuable space,

Winchester.

Yours truly, W. S. FLIGHT.

#### NEW COMPANIES REGISTERED.

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#### BACK NUMBERS OF "FLIGHT."

SEVERAL back numbers are now becoming very scarce, and when exhausted no more complete sets

will be procurable.

The publishers have pleasure in announcing that they have secured a few of these back issues of FLIGHT, and any of our new readers who may wish for sets, No. 1 to date, except Nos. 2, 3, 4, 6, 8, 10, 12, 15, and 16, but including the numbers containing full description and Scale Drawings of the Bleriot, Curtiss, Voisin, and Cody biplanes, the Wright full-size glider, and of Santos Dumont's "Demoiselle" monoplane; can obtain same for 6s. 9d., post free (abroad 8s. 5d.).

Sets to date, including all the above and in addition the scarce higher-price numbers: Nos. 2, 1s. 6d.; 3, 3s.; 6, 1s.; 8, 1s.; 10, 1s.; 12, 1s. 6d.; 15, 1s.; 16, 3s. 6d.; and 31 (with scale drawings of the Bleriot cross-Channel flyer, 2s.), but exclusive of No. 4, which is now obtainable in bound volumes only at the end of the year, and otherwise out of print, can be obtained for 20s. 7d., post free (abroad 22s. 7d.) from the Publishers, 44, St. Martin's Lane, W.C.

The publishers have only a limited reserve stock for bound volumes at end of year. Those wishing, therefore, to ensure obtaining Volume I complete for year 1909-ready end of January-with Index and Title Page, can book same now at the price of 25s., bound in cloth boards. Orders will be booked for these in rotation as received. As various numbers become scarce the price will be raised accordingly.

We have now been able to secure a very few copies of No. 16, and can supply same at 3s. 6d. each.

Bleriot Number separately, 2s.

#### FLIGHT.

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